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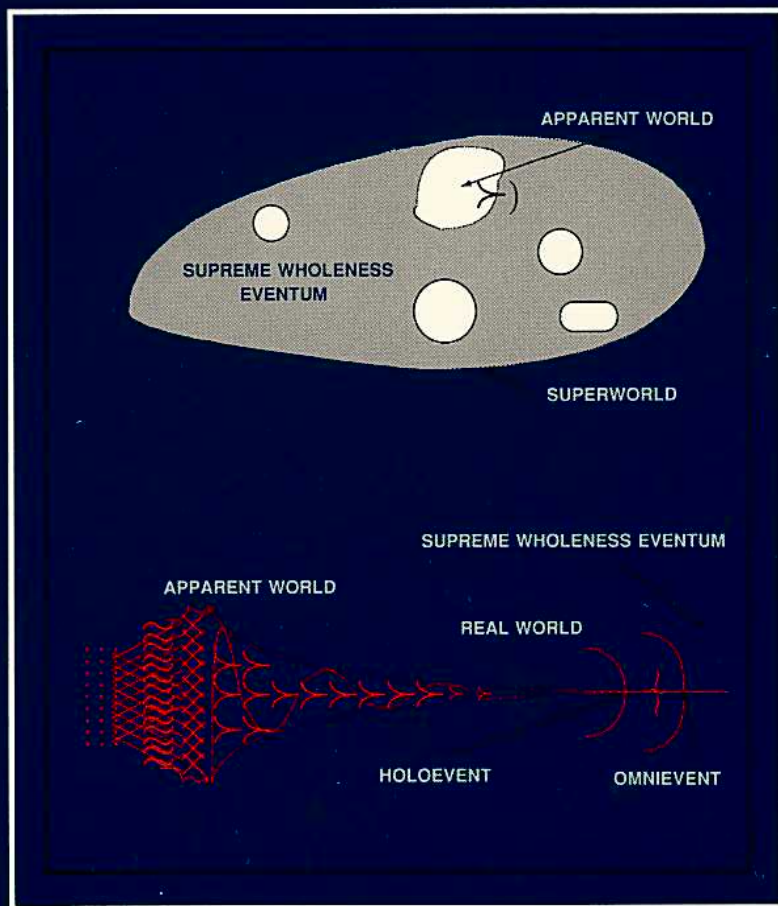
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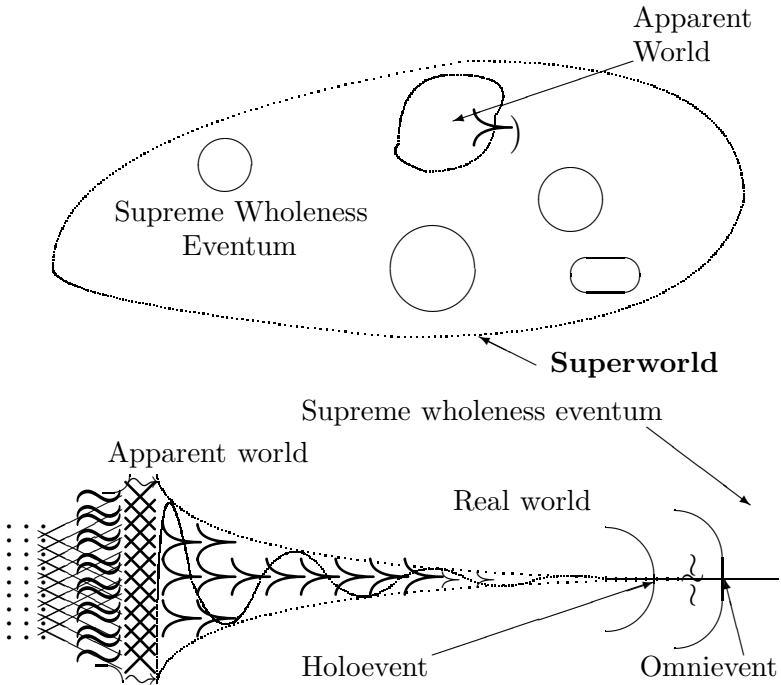


An Introductory Book

MOHSEN FAKHARI

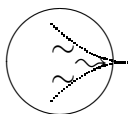
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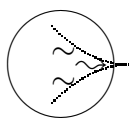


Eventics

An Introductory Book

The Foundation of the Unified World

MOHSEN FAKHARI



Eventics Press
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Los Altos, CA 94023
(415) 854-4449

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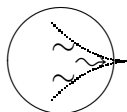
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To those
whom
I love

Whoever to read it, how ever to
understand it, it is still useful.
But, be patient and critical.

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Overture

Omar Khayyam (1050–1123 A.D.) gifted us his great world view and philosophy with his unique **Rubaiyat**.

*The Secret of the Universe is unknown to Thee and Me,
Its Wonder behind a Veil unseen by Thee and Me.
Some Talk past the Veil awhile of Me and Thee
As the Veil falls no more of Thee and Me
(all ends to **nothing**).*

*For in and out, above, about, below,
Tis nothing but a Magic Shadow—show,
Play'd in a Box whose Candle is the Sun,
Round which we Phantom Figures come and go.*

*Some think in deep in Ideology and Theology,
Some wonder about Uncertainty and Certainty,
the Crier from behind the Veil cries
Fools! the Way is Not This or That apart.*

*With Earth's first Clay They did the Last Man Knead,
And then of the Last Harvest sow'd the Seed:
Yea, the first Morning of Creation wrote
What the Last Dawn of Reckoning shall read.*

*The Moving Finger writes: and, having writ,
Moves on; nor all your Piety nor Wit
Shall lure it back to cancel half a Line,
Nor all thy Tears wash out a word of it.*

Preface

My curiosity about the events occurring around me at a very young age made me wonder and directed me to deepen my thought, within my capacity, in acquiring knowledge about these countless events. This curiosity in itself was an event, as well as those interrelated pleasant and unpleasant events that surrounded the entire world. And oh! What **Events**!

My motivation for writing this book, inspired from this curiosity, began when I was eleven. And although I have always had a lot of respect for schools designed for professional training in fragmented world concepts, my primary focus has always been toward the independent studies in which I had an opportunity to search for wholeness.

We live in Superworld (Omniwholeworld), in which physical, biological, psychological, mystical, religious, social and historical events are only **One** whole event (reality), and in which all of these **Many** events occur within the context of our apparent worlds.

This volume is devoted to the introduction of **Eventics**, with the central thesis that the entire universe from past to future, from here to there, with all materials and non-materials, is only a single Event synonymous to reality, which is governed by only one principle—**Nothingness (Holoevent, Omniovent)**.

This is a **Menu** about the totality of all of these events with a single source of Omniovent in Superworld, Holoevent in real world, and Nothingness in our apparent worlds. It is a new Menu for a fundamental change in our

values, perceptions, understandings, attitudes, thoughts and whatever we are associated with. This book in itself is an event, unfolded from the Holoevent that advocates the holistic approach in a broader sense to all of these events, giving a proper weight to our position in the world in answering our curiosities.

This is a new appreciation for man and his place in the universe: a meaning of existence, how our conceptual universe begins and how it ends—**Nothing**, full of everything. It eliminates the extrapolation and the exaggeration of the different fields of inquiries beyond their limits—physics cannot tackle the questions of religion, as religion cannot tackle the questions of physics. Each field such as physics can allow itself to express and conclude what issues of other field, such as religion, are belong to physics, but it cannot deal with real religious issues or eliminate them all together. It is in Eventics that we can try to deal with the totality of all as **one whole**.

I hope this book as another event interests both professional and layman, both old and young of all cultures. No doubt many, especially the professional, would temporarily misunderstand and disagree with this book. For although I have studied and delved in most of these fields for many years, by no means am I a professional in any of them. But in any case, the patience and critiques of these professionals as the event pieces of our fragmented world would benefit this book as well as the future development of this subject.

I know indeed that some individuals, and those of great name, too much prepossessed with certain prejudices, are unwilling to assent to this new principle. It is not my intention to detract from the reputation of these

eminent men; I shall only lay before the reader such considerations as will enable him to pass an equitable judgment in this event. All men of different disciplines and of different backgrounds can participate in the exploration of Eventics and its principle.

I can understand the criticisms that will be levied against Eventics, but those who fight it offensively are insecure in their knowledge and are afraid to allow man to be free with this Menu in his hand.

Despite the shortness of the book, the work presumes a fair amount of patience on the part of the reader. In the interest of clearness, it appeared to me inevitable that I should repeat myself frequently, without paying attention to the elegance of the presentation. The book is primarily intended for all levels of individuals. It is the attitude of the reader, which determines whether this book is easy or difficult.

The material here is beyond the range of an ordinary book or discussion. This book should be read again and again at various stages of a person's life, for it offers guidance at these different stages as it does to people with different cultures and attitudes. I believe this book puts in proper perspective the value of many excellent books and ideas gifted to us for the past 2000 years.

With Greeks we had the first beginning; with Galileo we had another beginning. Eventics is also another new beginning. May this book bring some one a few happy hours of suggestive thought!

May 24, 1988
Los Altos, Ca

Mohsen Fakhari

Chapter 1

Introduction

Eventics is coined here and concerns in the context of our apparent worlds, with **Events** of all kinds: physical, psychological, religious, mystical, social, historical, etc. It introduces the single **Holoevent** of *real* world and the sole **Omnievent** of the *Omniwholeworld* (superworld). It postulates that Event, synonymous with Reality, is the only entity responsible for the entire Omniwhole-world, the world that is governed by a single principle—the principle of Nothingness in our apparent world (Holoevent in real world, Omnievent in superworld).

The aim of this present book is to give an introductory account of Eventics and to explore its principle concerning the events, and to furnish a systematic outline of more than what is now known as scientific and non-scientific knowledge. We are in a period of Eventics revolution—one in which the position and meaning of the scientific and non-scientific approaches are undergoing reappraisal.

In real world and superworld, the dualism as the outcome of semantics is not invented and there is no strict

division between subjective and objective reality; there is only one omnireality—Omnievent. The physical universe and consciousness are mixed by fundamental Eventical order. The relation between mind and matter is not subjective or objective, but it is Eventics. We live in our apparent worlds with series of events of all kinds, embedded in superworld of a single omnievent. Our apparent worlds are worlds of semantics, which includes **symbolism** and **language**, and in which everything is expressed in terms of its opposite and nothing conveys any meaning without its opposite: existence is meaningless without non-existence, as is the realm of birth and death. It is just by avoiding such dual perceptions that we may approach Holoevent.

All around us what we see and what we do not see are events. Beyond the scope of our vision the unseen events exist. In ordinary language classification, they range from microevents to macroevents, from subevents to superevents; and embody physical, psychological, religious, mystical, social, and historical events.

In history of science, source books are themselves events. The work of Herodotus discussing Greek “events” is itself an event. The works of Euclid, Archimedes and Apollonius are themselves also events. Newton’s *Principia* is most certainly an “event”. The purpose of writing in political and social history is writing about human events.

The classical period of Greek culture, which lasted from about 600 B.C. to 300 B.C., was an event, affecting everyone’s life. This is usually marked as a beginning. With Galileo and Newton and Leibniz we had another beginning. And then, on 7 November 1919, Eddington

reported the confirmation of the “General Theory of Relativity”, and made Einstein known to the public and famous. Einstein laid the foundations of relativity in 1905, and exposed the revolutionary implications of Plank’s quantum theory. The theory of relativity and the new quantum mechanics articulated by Bohr and Heisenberg in 1920s, necessitated a fundamental change in the aspirations of science

With Eventics, we have another new beginning that requires the efforts of many generations to fulfill (if possible) its requirements.

This book is intended for all levels of individuals and all ages. It should be even beneficial to young children, as much as the child can comprehend. It is a disservice to a child to raise him with our apparent worlds concepts in order to readjust him to our standards for our convenience, without informing him about what we are doing to him. Before feeding a child with our prejudices and getting him lost in the sea of our thinking, we should inform him about our injections. This book serves that purpose too.

Chapter 2

Superworld

Superworld (Omni-wholeworld) can be visualized as an infinitely extended foam-like medium containing an infinite number of worlds similar to the voids in a foam. Superworld is the ultimate real world having a *unified supreme wholeness medium* that omni-holistically encompasses all of our **apparent** (what appears) worlds.

This book with a new title, **Eventics**, is concerned with a new topic that deals with the entire phenomena of foam-like superworld, including a new presentation of the interactions between our apparent worlds and the superworld. This is another new **Menu** set forth for those who are interested in developing a new insight. This work will be of particular relevance to all those interested in philosophy, physics, psychology and research into the connection between *consciousness* and *matter*. It concerns the universe of countless dimensions, which embodies its **wholeness**, and in which all fragmented concepts, (in particular the following dual concepts), are **one reality**. The example of these dual concepts are:

parts vs. whole, being vs. becoming, known vs. unknown, order vs. randomness, enfolded vs. unfolding, implicate vs. explicate, appearance vs. reality, mind vs. matter, brain vs. mind, continuity vs. discontinuity, observer vs. observed, subject vs. object, symmetry vs. asymmetry, reversibility vs. irreversibility, determinate vs. indeterminate, particle vs. wave, time vs. timeless, space vs. spaceless and micro vs. macro, etc. The notions of **whole** and of **holistic** refer to *omni-whole* and *omni-holistic*, **not** the hierarchical ones that are commonly used to describe many-layered psychological development with higher- and higher-level wholes. In that notion the whole of any level becomes a part of the whole of the next level, but here, this notion refers to the highest transcendental whole beyond the human psychology.

The superworld is inseparable from all of these apparent worlds, whereas each of these apparent worlds is separated from the superworld by its own very existence.

The main medium of omni-wholeworld that shapes the entire superworld with enclosed apparent worlds is the *supreme wholeness medium*. Superworld encompasses the apparent worlds in the *holistic* system in which the parts necessarily become changed by their mutual association, hence, their whole becomes something different than just the sum of the parts (Figure 2.1). In other words, superworld is not a collection (a sum) of the apparent worlds in which the parts remain individually unchanged whether they are isolated or together. Instead, the characteristics of superworld as a complex whole remain irreducible to the characteristics of the parts, and the whole becomes self-existent independent from the parts. Actually, the word ‘*health*’ is based on the Anglo-

Saxon word ‘*hale*’ meaning ‘*whole*’ and the word ‘*holy*’ is based on the same root as ‘*whole*’. That is, *it is healthy and holy to be whole*.

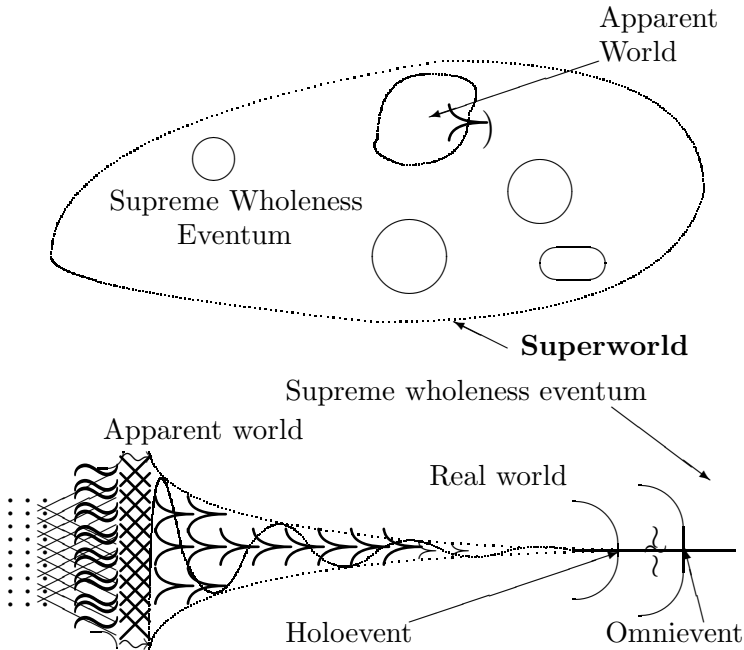


Figure 2.1: Superworld and apparent worlds

The foundation of Eventics is **Oneness**, **Wholeness** and **Nothingness** of a single **reality** or **event**. Our quest is to perceive this reality within the scope of our apparent worlds by the window of our vision. We *transfer* everything from *out there* to our apparent worlds by the process of *transformation*. In doing so, we carry over a

unexplained feature, which is basically an *unknown* element that we are obliged to worship, such as God in religion and the speed of light in relativity. In the case of religion and mysticism, these unknowns appear in terms of myths and gods with conservation qualities (have everything, are everywhere and exist all the time). In the case of science, they appear in the form of constants or conservation “laws”. Mysticism gives a more general idea of transformation, but it is inexpressible in terms of the mathematical tools of humans. However, science takes the rout of expressible method, but selects the simplest possible form of transformation that results in the introduction of constants in multiplication operations, such as c in $E = mc^2$ or c in ct of a metric. As an example, physics, dealing with physical events, considers *matter event* in isolation and transfer it to our apparent world by simplest possible form of transformation, using the speed of light c as a constant, in the form of *material energy* E : $E = mc^2$. In this sense, the *material energy* E and the special kind of *mass* m are not just interconvertible, they are intended to be the same thing with different units, using the constant speed of light for their unit adjustment. The process of transformation here is a special case of the operational technique (arithmetical and functional) in which only the multiplication operation of the arithmetical operation is utilized. In Eventics, a very general transformation is adopted that contains the entangled functional and arithmetical operations.

Included in our (apparent world) concept of reality is the definition of “**universal being**” in general, “**human beings**” in particular, and the relation of the human beings to the real supreme wholeness medium. Human be-

ings as a *para-holographic* piece of the universal being is associated with our apparent worlds and separated from the supreme wholeness medium by its own very existence. Holographic is derived from the hologram in which the *sum* total of parts is contained in each part, whereas, para-holographic is *more than the sum*. Human beings as a phenomenon is a system within a universal context who is an inhabitant of all interrelated apparent worlds. In common language, he has a biological origin, plays a solid role, integrates and coordinates the biological, social and other apparent worlds concepts. The prime characteristics of the human beings is the creation of a universe of **symbols** in thought and **language**. Human lives in a world not of *things* but of *symbols*. He creates, uses, dominates, and is dominated by the universe of symbols. For example, a coin is a symbol for a certain amount of work done, which indicates how crude some of these symbols are. Symbolism, and human language in particular, is well distinguished from sub-human forms of behavior, such as the expressive song of birds. The system of symbols or the symbolic universe enables us to explain why language, science, art, and other cultural forms are able to gain autonomous existence transcending the personalities of their individual creators.

The convenient introduction of *Nouns* and *Verbs* in our language as an approximation of our perception the world, is responsible for the apparent distinction between *Being* and *Becoming* (happening) that is introduced to us in the context of our apparent worlds (see Appendix B for description of some of the important words used in this book). The main role of modern physics has been to construct a bridge from *Being* to *Becoming*. In re-

ality, *Being* and *Becoming* are only a single occurrence but in an *enfolding* and an *unfolding* context. “**On**” is the present participle (a now-moment concept) of the Greek verb ‘*to be*’ (occurring). It means *Being* (a fixed, forever-lasting concept). Its literal meaning is the same as the Latin “**ens**”, from which the term ‘entity’ is derived. Hence “**on**” and “**entity**” are synonyms and represent both *Being* (a fix entity) in an *enfolding* context, and *Becoming* (an occurring entity) in an *unfolding* context. Here, “**on**” is used with its general meaning, not in the limited sense as in physics where “anti-on” is introduced to account for other possible existence such as antiatom, antistars and anti-galaxies. Actually, “on” conveys a holographic representation of existence showing different aspects of the existence depending upon our way of viewing it from different directions. The word “**thing**” is a highly generalized indication of any form of existence that is limited or determined by conditions. It goes back to various words that signify ‘*event*’, ‘*action*’, ‘*object*’, ‘*condition*’, ‘*meeting*’, and related words meaning ‘*to determine*’, ‘*to settle*’, to ‘*time*’, and perhaps had a original meaning of ‘*thing occurring*’ at a given time. For example, particle is not one ‘*thing*’ in its every day usage; it is successive unfoldments—a *series of events*. The word “**reality**” comes from the Latin ‘*res*’ meaning ‘*thing*’, ‘*reality*’ and ‘*event*’. In German, **Gestalt** is synonym for form or shape, and it also means a concrete ‘*entity*’ per se. The characteristics of perception are referred to the phenomenon of Gestalten. Since perception is “happenings in the brain”, then perception of these happenings must be “happenings” in another brain. Hence, we are involved in a continual regress. The important character-

istics of perception are curvatures, multidimensionality, movements, groupings, shapes of all kinds, the various constancies, melodies, speech, rhythm and etc.

In spite of the human creation of symbols, there is no *form* and *symbol* in supreme wholeness medium; and what is “**formless**” in supreme wholeness medium is “**nothingness**” (in broader sense) in *universal being*. The supreme wholeness medium is an unbroken whole in the *enfolded* or *implicate* (from the word “*implicit*”) order of all levels, including superimplicate orders. Our ordinary notions in our apparent worlds are in *unfolded* or *explicate* (from the “*explicit*”) orders that are abstracted as forms, derived from the deeper enfolded order. The enfolded order contains all unfolding orders that evolve into a form which can be “*observed*” by us. **Order** is described both in terms of structural arrangements and in terms of dynamic introduction of processes. **All implicates all**, to the extent that ‘we ourselves’ are implicated together with ‘all that we see and think about.’ So, we are present everywhere and at all times, though only implicitly. The term implicate order as used here is more general than the implicate (holographic) order in physics, which according to Bohm, the equations of quantum mechanics describe that order. It includes the implicate order of mind and higher transpersonal realms. The general description, i.e., *holonomy*, has to be expressed in all orders, in which all objects at all times are *folded together*. Every object is implicated together that only in certain special orders of description appears as explicate. **Escher** well presented the universal orders from implicate to explicate orders by his great artworks.

In superworld, there *is* (*occurs, occurred*) only one

single “**entity**” or “**reality**” from enfolded (*being*) order to unfolding (*becoming, happening*) order. This single “**reality**” of superworld is “**Event**” (*occurrence or happening*). According to **Whitehead**, the realities of nature are the prehensions in nature—the *events* in nature. He introduced the word prehension to signify the essential unity of the *event* as one entity and not as an assemblage of parts. He referred to event as the “*actual entity*” (Latin *res verae* meaning *true things*), which is both actual and potential; real and apparent; perishable and immortal; whole and part; a sequence of phases and a phaseless whole; subject and object; indeterminate and determinate; cause and effect; a *process* of becoming and an immobile, unchanging quantum; a continuous transition and discontinuous atomic succession; divisible and indivisible; extensive and inextensive; spaceless, spatial and beyond space; here, there and everywhere; timeless, temporal and beyond time; past, present and future; a concrescence and a transcendence; private and social; and etc.

What human beings allows as alternate realities are man-made sub-realities. The term “**Eventon**” with *omni-holon* order is introduced here to embrace the holistic meaning of the terms entity, being, becoming and happening as well as the meaning of the building blocks containing Gestalt, double helix, electron, photon, neuron (the content of the brain), etc. **Nothing is left in the world but Event**. The word event from Latin *eventus* being the past participle of *evenire* = *e* (from *ex*, out) + *venire* (to come) is in occurring-mode. The Greek word “*to holon*” (the whole) as used in psychology is an entity that, looking down, is whole, looking up, is part. Here,

omni-holon is used to denote the highest whole with no parts connotated, (see appendix B).

Reality and **Event** are synonyms and in some languages only one word is used to express both. Hence, *Reality is Event* and *Event is Reality*. That is, when the subject of concern is reality, the only unconditional assertion $X = X$, is

$$\text{Reality} = \text{Event}$$

Event (X) is the fundamental entity when the concern is the **Reality** (X). That is, *event* is the only *reality* in the entire domain (*eventum*) of superworld, from the supreme wholeness medium to the worlds of human beings, namely, throughout the entire *Omni-wholeworld* (superworld).

Consequently:

$$\begin{aligned}\text{HoloEvent} &= \text{HoloReality} \\ \text{OmniEvent} &= \text{OmniReality}\end{aligned}$$

HoloEvent is introduced here to signify the fact of *wholeness* and *nothingness* of a single happening that holistically encompasses all “occurrences” of universal being. That is, the holoevent, the fundamental entity of the world of universal being is superior to our constitutions of body and mind including our sensations. The term “**real**” world is used here to refer to the world of universal being approaching the holoevent. HoloEvent (HoloReality) is obtained only when all conceivable point of view have been combined; or still better to say, when

all these point of view have *vanished*. The holoevent carries the *implicate order* of all levels including superimplicate orders, and allows the human with ultimate capability to see and experience a multi-dimensional matter-mind-others world. The basic element (**eventon**) of the holoevent is **all-things—all-times—all-places—matter—mind—past—now—future—everytime—here—there—everywhere—others**.

The total law of the undefinable and immeasurable holoevent could never be known or specified or put into words. Rather, such a law has to necessarily be regarded as *implicit*. The unfolding explicit order of holoevent conceived in *real* world leads human to formulate the concept of *change* (the root of transport phenomena).

OmniEvent is introduced here to signify the fact of formlessness (no space, no time and etc.) of a single grand occurrence that holistically is responsible for the entire Omniwholeworld—the *Eventica*. Omnievent is the *eventon* of the supreme wholeness **eventum**, which is in enfolded implicate order and static, signifying *no change*; this is the root of conservation law. All concepts, entities, etc., in universal being are the footprints of OmniEvent of supreme wholeness eventum, which are introduced via HoloEvent. OmniEvent contains all concepts and entities known and unknown to human beings. It embraces the container theory of space and time (*object*) such as here, there, material, past, present, future; the container theory of mind (*subject*) such as consciousness, mental, mind, spirit, soul, non-matter and etc.—it is the holder of objects, subjects and etc. Another way to say it, OmniEvent is beyond space, time, and Others while still embracing them. Its basic element is *no space, no*

time, and *no* Others—*no* HoloEvent. By physical analogy, this event resembles the optical holography in which space and time at one stage is left out in *omnievent*, and the desired temporal results are retrieved through a readout function of frequency information in *holoevent*, a notion of *space/time object* out of *no space, no time frequencies*—a physical notion of “*frequency*” for event. In the physical realm, Grand Unified Theory reduces the entire world’s phenomena to *two* types of particles interacting by *two* types of forces, and Super-Grand Unified Theory reduces everything to *one* particle and *one* force. In Eventics, everything is only **one** *OmniEvent*.

What transmits “**out**” from the supreme wholeness eventum directionlessly is OmniReality. What is approached when the universal being comes “**in**” contact with this eventum is HoloReality.

The term **Eventics** is introduced here as a new discipline concerned with *events* ranging from OmniEvent to HoloEvent, and down to individual ordinary events (physical events, psychological events, political events, social events and etc.). The aim of Eventics is to describe the law to which all events (happening) conform.

The word *concept* is used here in the broader sense to refer to all human experiences (cognitive, noncognitive) that normally has been divided into *concepts* and *percepts*, emphasizing both *subjective* and *objective* implications, and both quantitative and qualitative implications. Normally, “percept” represents the qualitative order and “concept” represents the quantitative order of ideas. “Concepts” are products of thought, imagination, and memory. Concept is, loosely, a collection of percepts. But, percept is not only an assemblage of sensa-

tions; a percept has reference to perception, to Gestalten in general and to sensation in particular, to the kind of awareness conveyed by the senses with no distinction between external, sensory, awareness, or awareness of conscious states—a *vision* (multidimensional, curvature, movement, shape, grouping, etc.), a *sound* (speech, rhythm, etc.), a *smell*. Perception of reality depends in large measure upon the culture in which one is raised.

One of our tasks is to elaborate on the unified concept of **holoevent** in the universal being medium. Holoevent, as the asymptotic truth, is the light at the end of an “infinite” road of discovery, not within human grasp. This road ends to a tunnel leading to supreme wholeness eventum consisting of **omnievent**. Our concept of holoevent is the convergence of our knowledge that is getting denser and denser until it drains away and disappears into omnیهvent (similar to the black hole). The black hole is introduced in physics using light with its limiting speed as the means of observation. Where light cannot penetrate we have an “invisible” or “non-emitable” region (a hole). The means of approaching holoevent is the entire conceptual existence of our universe:

**Where none of our conceptual existence
can penetrate, we reach *holoevent*.**

An object is black if it absorbs all the light falling on it and emits none in return. An object is invisible if it does not affect light at all, but allows light rays to pass through it undisturbed, as in the case of a sheet of clear glass. A source is holoevent (or roughly speaking the **eventhole** analogous to *blackhole*) when it absorbs all concepts, entities and series of events falling on it and

emits none in a holistic way in return. This source is inconceivable (analogous to invisible in the case of light), such that nothing in its original formless that is inside the closed-off region of supreme wholeness eventum can ever escape out into the apparent worlds.

Holoevent is the grand event horizon and can be referred to the *eventum hole* of superworld. We can only visualize this process in terms of a distant tunnel between the point of *nothingness* and the point of *formlessness* of supreme wholeness eventum.

At the point \mathcal{A} we reach holoevent, the ultimate reality of universal being, where our own very existence also disappears in the context of our reference frame (see Figure 2.2). That point is the “**vanishing**” point, corresponding to the veil of Omar Khayyam, where all concepts including our own being end to “**nothing**”. As long as we remain ourselves, we can never penetrate into the gate \mathcal{A} , pass through the process tunnel \mathcal{ABC} , and reach the ultimate unknowable omnioevent of supreme wholeness eventum. For this requires the capabilities, definitions, and concepts beyond and independent from our constitutions, thinking, or whatever we are associated with in the universal being. Man is then facing the *ultimate unknowable*, which can never be reached as long as he remains in his present form and does not survive as a “**man**” by *Eventical* transfusion. The holoevent can be comprehended only by a being who survives the *Eventical* transfusion in making the two-ways or many-ways trip.

Since mankind’s attitude has always been to worship the unknowable, the **Omnioevent** is his **ultimate unknowable** that he has always been and will ever be worshipping. Newton’s definition of supreme God is given in

General Scholium of his Principia. He held that absolute space and absolute time are constituted by the omniscience and omnipresence of God—as His ‘Sensorium’, i.e., the means whereby all times and places are simultaneously present to God. Newton’s definition of supreme God crudely aims to omnisevent.

At the source of the holoevent not only all *series of events*—conceptual, physical and etc., including our senses and the concept of our being—are melted together, but also the conceptual separations of time, space, material, consciousness, mind and etc. are not invented. At this source, **Hertz**’s idea of highly complex intellectual process and necessity of a “*pure natural science*”, and the

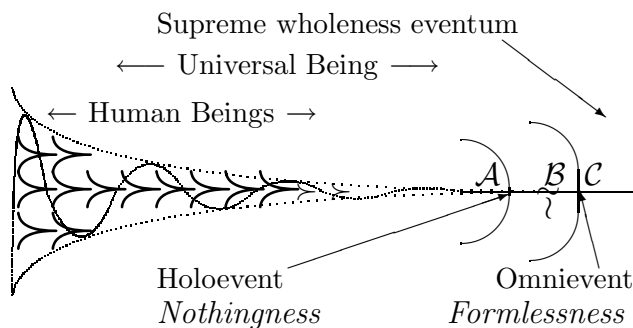


Figure 2.2: Events

idea of **Mach** and phenomenologists merge together. The holoevent holistically (rather than as a sum), contains phenomenism as well as all other conceivable physical events and non-conceivable events. The assumption of

the reality as the “sum” of the entities is a very crude approximation that is used in our apparent worlds. As an example, the sum of the parts of a structure does not give structure, but structure does contain parts. Another example is in music, when the tones *c* and *g* are sounded together to produce a quality called Fifth. That quality is neither in *c* nor *g*, nor does it depend on those particular notes. Any two tones with the ratio $2/3$ will be recognized as Fifth no matter in what regime of the scale they may be played. Fifthness is Gestalt, one of the approximate qualities of holoevent, which is different from either or any of its parts, and no amount of knowledge about the parts in isolation would ever give the remotest hint as to what Fifthness is like. This also indicates that there is a definite uniqueness in the holistic view of the real world, whereas non-uniqueness is introduced in the discrete view of the apparent worlds. We are so trained, both by language, and by formal teaching and by the resulting convenience, to express our thoughts in terms of the **analysis** (*ana* meaning above, *lysis* meaning to loosen—to loosen from above), separation, and decoupling, that intellectually we tend to ignore the true unity of the factors, that is an unity factor exhibited in sense-awareness, retaining in itself the passage of nature. These unit factors are the primary concrete elements of nature, which is called “**events**”. Everything is happening, and whenever and wherever something is happening, there is an event. The purpose of writing in political and social history is writing about human events. Furthermore, “whenever and wherever” in themselves presuppose an event; therefore, as a consequence of this there is always “something” happening on everywhere, even in so-called

empty space. Analogous to the material ether of field of force, **Whitehead** introduced the concept of the *ether of events*, the **eventum** in this book.

At the source of holoevent, nothing is ‘singled’ out, no direction is preferred, no ‘singled’ event is occurred. Therefore, in that source there is one whole event with full symmetry and reversible order. However, what appears in apparent worlds in terms of series of events is the symmetry-breaking, which brings about the irreversible time, the irreversible human beings and etc. Hence, in apparent world the true nature of time is irreversible with direction from past to future, as observed by the irreversible observer. Each structure, each being has its own irreversible time order with a different life span, referred to as the “*time operator*”. The time measured by a *clock* is a kind of overall average of this time operator, established by us as observers, which is meaningless for different individuals. There is also a “*time parameter*” introduced in science, which is reversible inspired from the symmetry property of holoevent. Any actual experiment, which we observe in apparent world as an event takes place in the broken symmetry of irreversible average time operator. As an example, in the **Schrodinger** cat experiment, there are two structures, the cat and the observer. Each of them breaks the symmetry of time, introducing the irreversible time operator by which the question and paradox of cat being alive or dead enters the picture.

Chapter 3

Events

Primitive man, thrown into a world that he did not understand, soon found that his comfort, his well-being, and even his life were jeopardized by his want of understanding. That is, in reaching the understanding of *real* world in approaching the holoevent his very existence disappears.

The first reaction of man to unfriendly surroundings was to project his own human motives and passions on to the inanimate objects around him: he peopled his world with *spirits* and *demons*, with *gods* (unknowns) great and small until all nature was a collection of animated personalities; as **Thales** maintained 'all things were full of gods.'

Historically, man has been through these three following stages:

1. First stage: animism, which was ended when Copernicus showed the motion of the earth.
2. Second stage: metaphysics.

3. Third stage: the positive stage, when **Comte** (1798–1857) expressed: “nothing is left in the world but happening (**event**).”

In history of science, source books are themselves events. The work of Herodotus discussing Greek “events” is itself an event. The works of Euclid, Archimedes and Apollonius are themselves also events. Newton’s *Principia* is most certainly an “event”. The purpose of writing in political and social history is writing about human events.

We are embedded in our apparent worlds with surroundings constituted by a chain of conceptual, apparent and non-apparent occurrences. The chain of *events* imprints patterns in our being, referred to as the limited sensations, and accommodates limited abilities for us to judge these sensations.

As long as we are in our apparent worlds, there is no ultimate source of knowledge. Every source, every suggestion, is welcomed; and every suggestion is open to critical examination:

Neither observations nor reasons are authorities.

What is the true shape of a lump of clay? Its shape is whatever it is shaped into. Intellectual intuition and imagination are most important, but they are not reliable.

Our apparent mode of reality has its limits. For example, physics can make only statements about strictly limited relations that are only valid within the framework of these limitations. Classifying and organizing the world are human activities. What we can observe of re-

ality is our own organization of it. We should give up the idea of an ultimate source of knowledge within the framework of our apparent worlds, and admit that all knowledge is human—mixed with our *errors*, our *prejudice*, our *dreams*, and our *hopes*. Each culture shapes apparent reality for the individuals born into it. We should not say the theory or theoretical concept is true or false, we should say it is convenient or inconvenient, useful or not.

We may, at the most, only suppose that our Gestalten in general and sensations in particular are truly complete with no limitations, and correspond to the true fundamental entity of the omniwholeworld (superworld). But, if this is true and we are only supposing it without being able to detect or recognize it, then we have insufficient and limited Gestalten and sensations.

The foregoing statement implies that the real world of holoevent may contain a system of Gestalten and sensations that embraces ours, or it may consist of some entities different from our sensations. As a result, our incomplete senses with their uncertain capacities and definite limitations misleadingly influence us in the development of the concepts concerning the real world. Therefore:

Since our senses imply limitations, the unlimited senses required to investigate the real world must be different from our limited senses.

The real world with its single **holoevent** communicates with man either with man's conceptual senses or through an entirely different set-up. In any case, the *enfolded* world of a single occurrence of **omnievent** at supreme wholeness eventum unfolds in *real* world, which

contains a check and balance field of holoevent with cross-intersecting communication paths, such that at any communication point with apparent worlds the specific local check and balance is satisfied. (See Figure 3.1.)

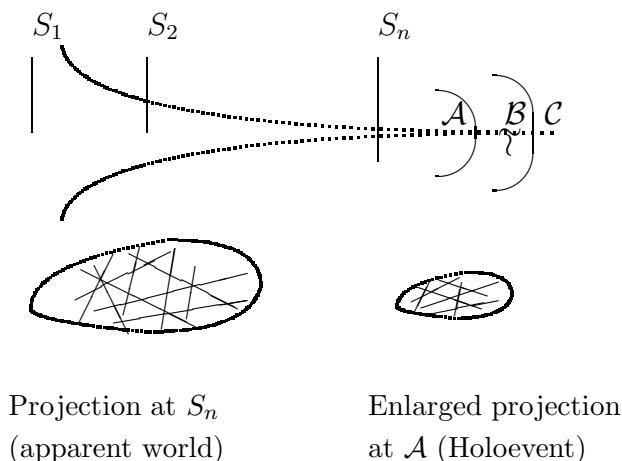


Figure 3.1: Event Path

That is, man unaware of the inner quality of holoevent of real world, satisfies the check and balance within himself and in communicating with neighboring occurrences while being in concurrence with the check and balance of holoevent. What we do could be not in the same pattern of occurrences of real world. However, it satisfies the **timeless** (*forever*) conditions of holoevent and omnievent. Even, what we refer as the accidental occurrence is a part of the one time occurrence of the omnievent.

But the artificial entities in our framework lead us to hold these confusing perceptions.

Therefore, each individual while enjoys the check and balance of his personal theory, he concurs with the check and balance of the entire group. These check and balance processes resemble the intersecting paths, analogous to the balance of a barn full of hay with the crossings of straws. They serve a single **holoevent** in the *real* world stage and represent the **series of events** occurring in our apparent worlds. These patterns of series of events, extended locally, conform with the system of real world of holoevent, analogous to a plane tangent to a general surface. The series of events that seems to us as movement are all present at the same time. These events implicate a series of one form of present (one degree of enfoldment) related to another form of present (a different degree of enfoldment), and they explicate different degrees of unfoldment that are all unfolding together at the same time.

With respect to **Newton's** observation of a falling apple, at the level of holoevent the occurrences of a hanging apple, a falling apple, a rolling apple and a stilled apple each of which is a concurrence of different sets of series of events, represents a *timeless, spaceless* and so forth, or in deeper sense, a *formless* entity as a *single holistic* occurrence. In ordinary concepts, the hanging apple implies a physical interaction with the tree predominated by the physiological process; and a falling apple represents a **physical event** (Newton's observation). What happens in our brain in observing the apple is **psychological event**, which could be physiological event if we have knowledge of the brain. At the level of

holoevent, and in reference to our framework, the events of looking at a table at this moment and the event of flashing of sky occurring millions of years ago, or what will be happening during the next million of years to come, are lumped together with no demarcation concept. That is, at this level, the two concepts of **now-forever-moment** and **here-there-whenever-place** are melted together. However, our ordinary concepts make a distinction between these events and distinguish them by a series of separate events.

Events occur (*exist*) at different levels: microscopic events (such as chemical changes); ecological events (such as the sun's rising); astronomical events (such as the expansion of the universe). Events are embedded in and entangled with other events. Events are pertinent to objects and to changes (transports) defined over objects. *Objects* and *transport* phenomena are two different aspects of an *event*. Some properties of objects left invariant under certain transformations. As Heraclitus maintained, the world is the totality of events and not of things. We should not think in terms of a set of separate objects as basis, instead, we work with **event** where we have a structure in which the **verb** has a primary function. This requires an introduction of new mode of language. **Bohm** introduced *rheomode* (*rheo* is from a Greek *verb* meaning *to flow*), and here **occurring-mode** is introduced for this mode of language. The fundamental entity is *event*, becoming (a process of manifestation from event to a series of events) to human worlds by unfoldment. Therefore, the human task is to make inquiry on **becoming** by developing the *science of becoming*, *mathematics of becoming*, *philosophy of becoming*, *psychology*

of becoming and etc.

The *real* world of **holoevent** is inconceivable by our structure. We are inhibited in apparent worlds of our traditions, which created our way of existence with all conventional entities such as time, space, eating habit, living, dieting and so forth, such that we can never adopt a complete revision to our system. For this adoption implies the total destruction of our concept of existence. In other words, the mutual interactions between man and environment do occur leaving him very limited choice of alteration, i.e., he is so bounded by his inherited apparent worlds that it is not possible for him to release himself from it by any action and still survive. This confirms that things become out of control of the initiators.

Holoevent contains all events of our apparent worlds, being a gate to the mode of *nothingness* while conforming to the mode of *formlessness* (i.e., timeless, spaceless and etc.) of omnievent. That is, all series of events are created in our frame of existence, which have the unique source of holoevent. It is the essential character of *holoevent* that enables us, in our apparent worlds, to foretell and predict (in reference to our framework) the occurrences of the events. Hence, we can even predict so called surprises, and eventually, by advancement of our knowledge, be able to predict more and more happenings, though “we” can never comprehend the holoevent entirely.

The series of events in our apparent worlds, at one hand, conform locally with holoevent when all series are viewed as a whole. On the other hand, they construct a pattern convenient to our constitutions that is conceivable by our knowledge.

We proceed with the process of check and balance of our senses continuously until we satisfy ourselves. We *confirm* self-consistent definitions while we *conform* to starting definitions. Definitions are selected in advance to produce precisely the conclusion desired. We make progress by this effort but our progress is limited by the capacity of our conceptual senses. We view the world and introduce new theories insuring the ease of our senses. Since we dislike uneasiness for our senses, we introduce the rules more comfortable to them, and to achieve our goal we look for **simplicity**. The search for “**truth**” is a never-ending *quest*, yet we pledge ourselves to seek it. The compatibility of all man’s rationalities is due to the circumstance that it is the human beings who is making the constructions of so called reality and who provides the coherent consistency that run through all of them. The comprehensibility of our universe is not the so-called “greatest miracle of universe,” because our own works would be comprehensible to us. Nature does not force us to choose from all possible operational definitions the ones that lead to the simplest so-called “laws” of nature, but in practice we commit ourselves, often unconsciously, to this maxim of **simplicity**.

Our concepts are developed by a rather complicated process of interaction of different senses of the individuals as well as the historical accumulation of conceptual senses of all men before us. We present descriptions of the occurrences and definitions in our conceivable ways and invent explanations by our standards, which are non-contradictory to our sensations. Nevertheless, it is possible for a concept to be ‘consistent’ with holoevent, or to be ‘effective’ in aiding us in approaching the holo-

event, although a different system of senses is required to achieve this triumph.

We are surrounded and influenced by our concepts and definitions such as *space*, *time*, *velocity* and *acceleration* such that they appear quite natural and obvious to us. The concepts that appear inconsistent with our senses would be considered mysterious, until, with the expansion of our knowledge, a new approach is developed to remove the inconsistencies. The new view continues to hold until another contradiction is detected when the same process is repeated again. In other words, any revolution in our behavior adjusts itself in the course of time to what is suitable to our apparent worlds. Therefore, it is possible that the new ideas, introducing a way for making our concepts consistent with our senses, direct us into a wrong path. In any case, no man under any circumstances can ever free himself from the historical experience and prejudice of all generations of man; as a result, he can never propose a right path for certain as opposed to what it seems to him as a wrong path. The only path that should be detected to be wrong is that with a structure of concepts and state of affairs, which *dictates* absolute ideas and rules. The nuts and bolts of the world structure, seemingly rigid, undergo the elastic and plastic behaviors in the world that is conceptually comprised of *elastic*, *plastic* and *fluid* entities as described in reology.

The series of events, responsible for the changes and the diverse world of our experience and prejudice, are merely part of the convenient, locally balanced, system of our perceptions. In the Parmenides system there is the supposition of entity behind apparent change, where there is no need for law because there is no change to

be regulated. In **Eventics**, this entity corresponds to the *enfolded* order of the *holoevent* of real world and, in a deeper sense, the *omnievent* of omni-wholeworld. The Parmenides philosophy represents the limit of the search for explanation. It is a limit, which can never be reached by science, because science hopes to explain our experience and prejudice. In Eventics, one of our tasks is to search for an explanation of apparent worlds consisting of the series of events. This field encompasses the entire spectrum of scientific and non-scientific procedures to describe the apparent world at its ultimate limit. Heraclitus' famous saying: 'you cannot step into the same river twice—because in the interval between steps the river flows by and so changes' belongs to our apparent worlds consisting of the series of events as the unfolding orders of holoevent and it has no ground in real world of holoevent, as well as in omni-wholeworld of omnievent.

The man-made standards are so rigid that it is impractical to counterbalance them without paying the balancing price. As a result, man suffers for those things that he is not in favor. Consequently, it is up to man as a whole to set standards in making life pleasant or miserable for all, while complying with the real world. He can optimize his effort in achieving enjoyment, suffering, or any quality he wants to be associated with and be accustomed to. He can establish his standards and control it for the benefit of human beings while still conforming to *holoevent*. He can follow the direction dictated by holoevent and still have any workable set of concepts, standards, and existence definitions. At one extreme, we could have been people trained by concepts of tradition to enjoy the hard punishment at every instant or suffer

from the pleasant moments of our lives, in reference to our present standards. We could have, for example, disliked freedom and loved dictatorship, which has been a concept

imposed by some nations.

At holoevent, the word “**if**” has no meaning so that the statement of ‘if I drop myself under an automobile and get hurt or killed, I will change the pattern of my life’ is meaningless. For when a person really means to take a certain action, then his behavioral capacity in response to the rest of the world is already established. That is, he is not doing it as a result of the making the “*if*” statement. Therefore, we should realize that the series of events constructed in our apparent worlds could not be arbitrarily altered to contradict the real world of holoevent. Hence, within our apparent world and using ordinary language, we should always replace “*if*” with “*when*” in our statement.

The *holistic system* of occurrences in our apparent worlds is within the scope and under the control of holoevent. However, our paths complying with our concepts in our apparent worlds, based on the separation of events, might be wrong as being a self-satisfied circular operation in our apparent worlds, while being non-contradictory to holoevent. Then our action in apparent worlds will not alter anything in real world, and cannot dictate anything to holoevent that already occurred in reference to our framework. Our apparent limited **free will** is a self-imposed tolerance for perceiving real world in approaching the holoevent. These presentations can be argued by introducing the word “**if**”, which has no meaning in the *real* world.

Chapter 4

Eventics Principle

In **Eventics** there is a single starting point for *science*, *philosophy*, *psychology* and *etc.* However, the development of concepts at an ordinary level begins with a naïve picture of the world—the apparent world. Our concepts at the ordinary level of apparent world (level \mathcal{A}), ultimately reach the scientific order (level \mathcal{B}), and approach the **holoevent** of the real world (level \mathcal{C}). When our concepts at the ultimate level of understanding reach the limit of our contact with the real world, they end to something inconceivable by us, i.e., in our standard of notation they end to “**nothing**”. That is, in accordance with our standard of notation, all our conventional concepts are our impressions of processes that are eventually perceived to be dying out, and every concept ends to “*nothing*”. This is analogous to a wave in the ocean that its motion does not carry real material, but a process is moving that eventually ends to nothing at the shore. This

description is the foundation of formulating the system that constitutes the apparent world of man with ultimate knowledge as it was realized by **Omar Khayyam** in the 12th century. St. Thomas Aquinas (1225-1274 A.D.) maintained that it was logically possible for the universe to have been created by God but out of *nothing*, and yet to have existed from all eternity as Aristotle believed. Temple Thurston in his 1909 book, *The City of Beautiful Nonsense*, stated this clearly: "Everything in this world is nonsense. The crown is nothing; the ring is nothing, too. Each would mean nothing but nonsense and empty foolishness except to the eyes, which behold the symbolism behind them. Yet they, because of their meaning, dominate the world."

The forgoing presentation constitutes the following Eventics principle:

Nothingness of *apparent world*, corresponding to

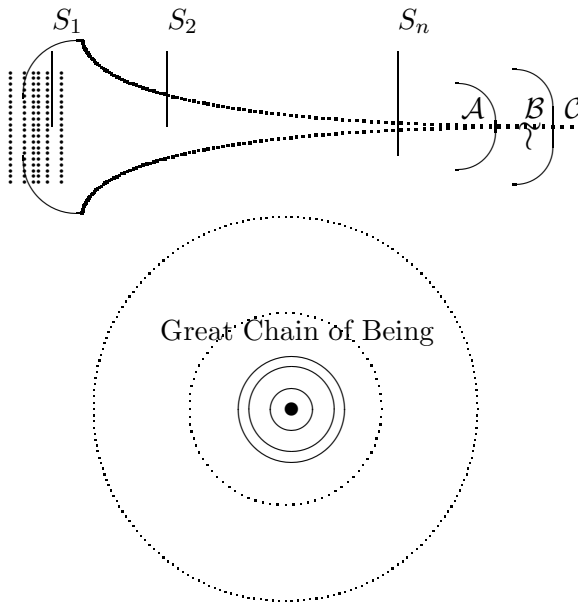
Holoevent of *real world*, and

Formlessness or **Omnievent** of *superworld*.

This is the **Eventical** foundation of entire omniworld (superworld).

The interaction of *apparent world* with the *real world* at the gate of *holoevent* created a class of sensations and the order of understanding that causes holoevent to become grasped by the *man with ultimate knowledge* as a bundle of wave-like events. This bundle of events similar to divergent waves collapses like a wake when viewed by our system of *conventions* and *simplicity*. This is analogous to the occurrence of shock waves caused by

the dispersion in media (*material* and *geometry*). In this case, the limited order (*quantity and quality*) of our thinking and matter tends to *material* dispersion, and the inevitable introduction of a wider domain of our existence than the point of *nothingness* brings about the *geometry* dispersion. At this stage we perceive the world as a combination of the individual *events*, and in common language, the *entities* and the *objects*. The so-called



Cross section at S_1 (apparent world)

Figure 4.1: Great Chain of Being

Great Chain of Being described by **Wilber** is a cross-

section of this funnel-like medium, which presents the farther apart fields of inquiries as the cross-section is farther away from the point of *nothingness*. Conversely, the closer cross-section to the point of holoevent indicates the more convergence of different fields of inquiries within our apparent worlds.

The process of developing a concept is an occurrence interconnected to other activities of all men and their communications with their environments. Man assumes the methods of investigations and tries to describe the pre-assumed methods. He identifies a favorable entity and expresses it in terms of other entities that, he feels, are essential to him. Therefore, the whole process is a self-balanced *closed-loop*, independent, but within the scope of the real world of holoevent. For example, the development of several languages such as English, French and etc., is a self-balanced and self-satisfied idea that several equally binding original conventions represent a self-contained and satisfactory means of communication of ideas within a group of men with a pre-established extant of communication. Similarly, by an ingenious cyclic device, physics secures for itself a self-contained domain for study with no loose ends projecting into the unknown.

By recognizing the above description without any more expectation, man can generate concepts in any subject that he is interested in, and express the created entities in terms of other appealing items or concepts such that he can benefit from them. This can include the concepts in physics, psychology, and social problems, as well as the concepts of the separation of these fields. On this basis, he adopts the approximation approach in viewing the world and generates concepts within his apparent

worlds by the following method.

By trial and error and through check and balance of all senses, man imagines his abilities in the approximate orders, and modifies his imaginations by a rather involved iterative process. Because of the complexity of this process man starts his effort by developing a compelling tendency toward rational **simplicity**.

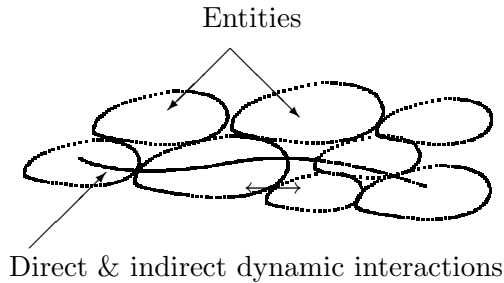


Figure 4.2: Entities Interactions

The continuum eventum of the real world of holoevent with the characteristics inherited from omnioevent, is approximated in our apparent world by a series of distinct entities in a discrete order suitable to our frame of existence. These isolated artificial entities are supposed to interact with each other in a certain way within the scope of our abilities. These interactions may occur between the closely related entities or between all entities by a very complex order, analogous to two-body and many-body problems (see Figure 4.2).

We promote the concept of discretization of the field of study about the world, in terms of the understandings of *ourselves*, the *world*, and *our relations to the world*.

Each of these fields is further discretized to deal with the particular aspect of our understanding. In the organization of knowledge, the world is divided into *domains* of experiences. Domains fall into larger groupings called *realms*. Some domains bear a sequential relationship to each other, whenever a number of definite statements can be made about their relationships. In each of these domains certain items “appear”. **Descartes** and **Comte** showed us how the Renaissance viewpoint organized knowledge. It separated objective and subjective perceptions and divided the objective into such specialties as physics, chemistry, biology, and sociology, which lead to separate departments in educational systems.

Accordingly, we express our thoughts in terms of the concepts of philosophy, psychology, physics, religion and etc. We think of them in terms of matter and mind, and by the world of **within**, **without** and **interactive** ones. Physics at one extreme adopts the materialistic view of matter and works with physical world; and religion and mysticism at the other extreme adopts the spiritualistic view of mind and deals with man from within. Each realm has a special organization of sub-reality, which is necessary to make the data from it lawful. For example, in the domain of mechanics we are dealing with a limited number of physical entities, such as “*mass*”, “*position*”, “*velocity*”, and “*acceleration*”, whereas in the domain of thermodynamics, we deal with a much larger number of interacting entities, such as pressure, temperature, free energy and entropy. These fields as a separate concept could not provide a complete description of the real world. Only a field that encompasses all fields of inquiries can acknowledge an effort toward the understanding of

the real world of holoevent.

A systematic account of our approximation method of inquiry adopted in our apparent worlds will be given here to obtain a deeper insight of existing concepts and to aid the extension of concepts in our apparent worlds. Extending background in this systematic approach can direct us toward the discovery of non-discrete (concrete) concept of holoevent. In this regard, the extension of the holistic system theory at every stage of discretization as well as the broader *para-holographic* view of the world are prerequisite to achieve this goal.

By convention man adopted the approximation approach to **discretize** the *universe* in terms of the *distinct entities* that seemed important in reference to his work. He made use of this procedure in a limited sense to satisfy certain desires and introduced basic entities such as *matter* and *mind*, *space* and *time*; and separate fields of **physics**, **psychology** and etc. As man proceeded, he improved his approach to a point that he made attempts to **unify** these elements, and tried to weave the significant elements into a coherent and *natural whole*. However, this man-made unification of the elements should not be confused with the real original *unity of holoevent*.

The holoevent of the real world **eventum** as a continuous unified medium of a lumped occurrence cannot be perceived by our limited senses, intuition, and whatever we are associated with. Its description by our senses becomes so contradictory that we can only accept it outside of the region of our senses and intuition. The unified concept (in the ultimate sense), of our apparent world is influenced by our sensations and intellect, and by the nature of separation of our senses such that it cannot be

presented by a continuous continuum. Then, the man-made unified apparent world is a non-continuous, non-differentiable, non-smooth medium that includes jump, singularity and etc. That is, this artificial medium consists of a conglomerate of bits of different entities *unfolded* from a single *enfolded* **holoevent**.

Chapter 5

Apparent Worlds

5.1 Universal Being and Human Beings

An apparent world is analogous to a barn full of hay in which the crossing straws represent crossing paths with intersecting points of events. Human beings is a natural entity—an event. He is an inhabitant of his apparent world. As a biological organism (event), he *creates*, uses, dominates, and is dominated by the world of *symbols*. He creates his own world that is called *human culture*. Two factors that are closely related to each other are involved in this creation: *symbolic* system including language, and formation of *concepts*. His world of symbols within the apparent world consists of physical phenomenon of symbolism, as well as the mental phenomenon of symbolism, including the conscious symbolism of thoughts, values, cultures and experiences. His symbolic world is described in terms of the aesthetic, scientific, ethical and religious

values. He symbolizes in his apparent world the pieces of the holoevent, which he hopes to correspond to the real course of the holoevent. But again, he is committed to the circularity assertion, clearly stated by **Hertz**: 'the consequences of images will be the images of consequences.'

Of course, the concept of symbolism is far broader than that of language, and in fact the symbolic universe becomes, so to speak, more clever than man, its creator. Language is a highly developed form of symbolism.

In common language, the word anthropology (derived from Greek *anthropos* meaning man) is used as the science pertaining to man. Anthropology is the scientific study of origin (*genesis*), and the physical, social, cultural development and behavior of man. This includes humanities, linguistics (language), and psychology.

The man-created symbolic universe depends on categories, which are universally human, and depends on categories developed historically within a certain civilization. This depends on the symbolic framework of the respective cultures or even the different frames of reference within a given culture; what is labeled as heroism in the frame of reference to war is penalized as murder in civilian life.

As a consequence of the rise of symbolic knowledge, there arose a split in the universe between the knower and the known, the thinker and thought, the subject and object; and our innermost conscious as knower escapes its own grasp and remains as the unknown, unshown, and ungraspable, much as your hand can grasp numerous objects but never itself and our eye can see the world but not itself. **Escher** by his arts demonstrated several examples of these entanglements between observer and

observed—a picture of a man who contains himself, a gallery that contains itself, a town that contains itself.

The apparent world we know is constructed in order to see itself. But to do so, it must first cut itself up into at least one state that sees, and at least one other state that is seen. However, to see itself as an object, it must act so as to make itself distinct from, and therefore false to, itself. Just as a knife cannot cut itself, the universe cannot totally see itself as an object without totally mutilating itself. See **Escher**'s artwork of a hand drawing a hand that draws a hand.

Eddington said: Nature that provides the knowledge of one-half of the world will ensure ignorance of the other half. Eventics says: Nature that provides the apparent knowledge of apparent world ensures the ignorance of the real world. Reality lies "beyond" the shadowy (apparent) symbols. Not realizing this, man becomes lost in his world of abstractions, thinking only of symbols about symbols about symbols about thing, and reality never gets in at all.

In one mode of knowing, our world of the sense and intellect is characterized by dualism, symbolic, conventional, apparent, intellectual, detention, thought, and outseenig. In other mode of knowing, our world of intuition is characterized by oneness, intimate and prehension, natural, real, intuition, contention, awareness and inseeing. We cannot dispense with symbolism in language and thought, but in real spiritual experience these symbols disappear. Similarly, **Taoism**—knowledge of the way (Tao)—refers to symbolic world as conventional knowledge and real knowledge as natural knowledge. For us, almost all knowledge is conventional knowledge, be-

cause we do not feel that we really know anything unless we can represent it to ourselves in words, or in some other system of conventional signs such as the notions of mathematics or music. It is called “conventional” because it is a matter of social agreement as to the codes of communication. Taoists believe **those who know do not speak; those who speak do not know.**

If we attempt to describe reality in words, we must also describe the words that we use, and then describe the words we use to describe our words; thus, reality is lost in a vicious circle. We cannot think about life and reality, because this would have to include thinking about thinking, thinking about thinking about thinking, and so *ad infinitum*. **Dunne**, in his *Serial Universe*, refers to this circularity operation as an *infinite regress*. This also occurs in music, art and mathematics. **Bach** gave an example of the notion of *Strange Loops* in music that occur whenever, by moving upwards (or downwards) through the levels of some hierarchical system, we unexpectedly find ourselves right back where we started. **Escher** created some of the most intellectually stimulating drawing of all time. Many of them have their origin in paradox, illusion, or double meaning. The *strange loop* is one of the most recurrent themes in Escher’s art. Implicit in the concept of strange loops is the concept of infinity, since a loop is a way of representing an endless process in a finite way. **Godel** discovered the strange loop in mathematical system by translating the Greek paradox in philosophy, the so-called **Epimenides** paradox: “**This statement is false**”. Godel’s idea was to use mathematical reasoning to explore mathematical reasoning itself and found the Godel Incompleteness Theorem, which states:

Under specified consistency condition, any sufficiently strong formal axiomatic *system* must contain a proposition such that neither *it* nor *its negation* is provable and that any consistency proof for the *system* must use ideas and methods **beyond** those of the *system* itself.

We speak of the symbolism of mathematics, physics and genetics, as well as of music and painting. The symbolic forms comprise those of reason, i.e., everyday and scientific cognition, and all activities characteristic of human mind and culture, including language, art, myth, and so forth. They are creative functions of the individual mind and culture concerned. **Cassier** and **Langer** broadened the subject of symbolism from a *philosophical* angle, while **Bertalanffy** dealt with the same subject from a *biological* view point. *Symbolism* ranges from **Carnap**'s *logical syntax of language* to **Goethe**'s concept of *Faust* (poems) symbol, to **Van Gogh**'s *landscape* (painting), to **Bach**'s art of the *Fugue* (music), to **Spengler**'s Ur-symbols of *culture*, to **Tilliah**'s *religious* symbols, to **Freudian** and **Jungian** *psychological* symbols, and to **Einstein**'s *space* (physics). It is interesting to note that a new way of thinking started at the beginning of the 20th century when Einstein's theory of relativity, Freud's psycho-analysis, Marx's theory of history, and Adler's individual psychology, were introduced about the same time.

Cassier's work extracted from a matrix of history of philosophy, linguistics, epistemology, mythology, history and philosophy of science, and so forth. By expanding **Kant**'s *Critique of Reason* into a *Critique of Culture*, Cassier stated that symbolic forms are essentially what **Kant** termed "*categories*". He demonstrated how the

categories of existence, ego, space, time, number, and so on, emerge in interdependence with language, myth, and science. He created a broad general background by connecting the evolution of knowledge with the totality of spiritual culture: myths and religion, psychology and metaphysics, ethics (philosophy of conduct, of right and wrong, of morals and responsibilities) and aesthetics (philosophy of beauty and its expression in art). The concept of *symbolic form* is an extension of **Kant**'s doctrine of *schema*. Schema is a sensuous-intellectual form. It is the unity of concept and intuition, the common achievement of both factors. The schema, according to Kant, is a phenomenon. Language possesses a schema. Art also is a concrete manifestation of union of intuitive and structural forms—the *schema*.

Similarly, the basic idea behind **Don Juan**'s teachings is that **we create the world around us by our assumptions**. Our rational system of interpretation carves out a certain set of perceptions, connects them in a certain way and announces: "*the world is like this*". What we see depends on what we are prepared to see. When we realize that all systems of interpretation are equally arbitrary, it is possible to leave one possible world and live for a time in **Wheeler**'s *superspace*. All possible worlds are equally valid. I choose to live and to laugh, not because it matters, but because that choice is the "best" of my nature.

Our thinking process (our ego) representing the mental world (*mind and consciousness*) and the reality that we think about, are inseparable. This reality (*event*) is presented conveniently in our apparent world by the separated material and non-material entities. Man lives in

his apparent worlds—the worlds of fragmentation. These worlds are created by the very fact of existence of man as a separate entity. This is a circular process, which is well described by the artworks of **Escher**. A process of creation of fragmentary apparent worlds in which the fragmentary man is created; who develops the notion of these apparent worlds and himself. Thus, it seems natural to man to adopt the process of division to create a manageable world for himself corresponding to his limited capacity. The extension of this mode of fragmentation created a kind of general confusion of the mind. The result of this artificial breaking-up has lead to science, technology and sub-specialties, separate nations, and different religious, political, economic, and racial groups. This fragmentation has even been extended to individual human beings in accordance with his different psychological characteristics, and those individuals who are going beyond the ‘*normal*’ limits of fragmentation are classified as paranoid, schizoid, psychotic, etc.

The creation of the fragmented apparent worlds, including the universal being and the human beings, are for convenience. We realize this process of division becomes both necessary and proper to deal with practical work. However, we should not go beyond its limit of usefulness and convenience. That is, the notion of separately existent entities and fragmentation is illusion within the context of our apparent worlds. There is a multiplication of **one** and unification of **many**. This is true for the beginnings and endings of worlds and of individual beings, where they expand from a *point* without position or dimensions and a *now* without date or duration (see Figure 5.1).

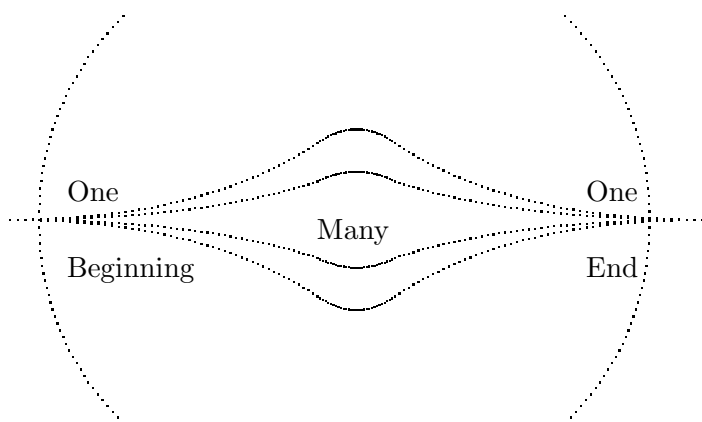


Figure 5.1: One and Many

A cube would appear to a two-dimensional being (the flatland) as a square. This means, when we view the apparent world with our limitations we will see the world in that limited way. The universe does not exist only in our familiar three dimensions or in Einstein's four dimensions. It is a universe of countless dimensions, which embodies its wholeness. The higher dimensional reality is one unbroken whole of holoevent that '*extending*' through the universe and including all particles and fields, is enfolded in the higher implicate order of whole. This whole is presented to us as a multidimensional reality, expandable in a series with infinite terms that unfold into our familiar multidimensional explicate orders.

Eventics views human beings as an event, a unified whole of the fields of psychology (*mind stuff*) and neurophysiology (*body*); and it scopes out the holistic study of

what pertains to human beings including all his symbols that have been partially described above. Human beings is a para-holographic piece of universal being, which at a deeper level reaches the holoevent. The holistic view of the world is adopted here to bring us closer to the reality of holoevent.

Chapter 6

Concepts in Apparent Worlds

Engaged in a circularity (*cyclic*) method of world view, in any branch of inquiry of knowledge, we describe and study the linkage of pointer readings with pointer readings in endless *cycle*. For example, in **Einstein's** law of gravitation we start out with a statement about *potentials* and go through the cycle of definition and end to *potentials* again.

In our apparent worlds, the events are interrelated by a *web-like* network of **series of events**, including the event of the existence of the “*human beings*”. To describe each event we are engaged in a circular operation resulted by this network. Nevertheless, the entire network of series of events is like a bundle derived from a single holoevent of the real world. Thus, the structure of each event is within the scope of the holoevent and is decomposed of the entities that we introduce for our convenience. To make progress, we in our apparent worlds

of circular operation search for **simplicity** and proceed with approximations by introducing the convenient tools. Thereby, we are impressed by our power of explanation and by amazing partial practical success of our concepts and theories. We should also realize that, in physical world, social life, political life, and any other field, nothing ever comes off exactly as intended. Things always turn out at least a little bit differently. We hardly ever produce precisely the effect that we wish to produce and usually get things that we do not want at the bargain. Of course, we act with certain aims in mind; but apart from these aims, which may or may not really be achieved, there are always certain unwanted consequences of our actions; and usually these unwanted consequences cannot be eliminated.

Our general notions of the nature of reality (**event**) and of the relationship between our thought and reality are implicitly or explicitly formed in our self-world views. We should be aware of this fact at all time. A painter of the universe, including himself, can never paint himself in a right position of his body. It will be based on his judgment. The mind that any human science can describe can never be an adequate representation of mind that can make that science, and the progress of correcting that inadequacy must follow the *serial process* with both apparently *independent serial* terms and *regressive serial* terms similar to the eigenvalue problem in mathematics. We are self-conscious creatures aware of something, which we are able to regard as other than ourselves. Reality as it appears to humans is impossible to treat as rational except by exhibiting it in the form of an *infinite series*. And according to **Dunne's** theory of serialism: **whatever the**

universe may *be* in itself, we are faced with a serial universe with infinite terms. This characteristic is apparent in all branches of sciences and in particular, in measurement of space and time. The application of series in mathematics, and in particular, the greatest of all the **Taylor** series, is well appreciated by scientists. Dunne illustrated his serial universe by depicting an artist who set out to paint a picture of the universe; having painted the landscape before him, he realized something was missing—himself; so he moved his easel back and painted himself in; but something was still missing—himself painting himself in; so he moved his easel back again—and so on.

As an example, the atomic theory first proposed by **Democritus** has led us to look at the world as being composed of atomic building blocks, moving in the void, and enabling us to understand the entire world in terms of the movements of ‘one single’ set of basic constituents through a ‘single’ void. However, this should be regarded as an *insight*, a way of looking, and not as an absolute truth, which brings about fragmentation. That is why the notion of atomism as absolute truth leads to confusion in the domains of quantum and relativity theories. In quantum theory, the observed atom and observer are inseparable. In relativity, there is no signal faster than light; i.e., a break down of the concept of a rigid body. Whereas, the atomic theory assumes an object is bounded rigidly to all other parts. Both relativity and quantum theories should view the world in terms of a ‘*universal flux of events and processes*’. In biology, modern molecular biologists believe that the whole of *life* and *mind* can be understood in mechanical terms by the structure and function of DNA molecules. This is also the

trend in psychology. This fragmentation is an attempt to *divide* what is actually *indivisible* and is followed by an attempt to *unite* what is not really *unitable*. The appearance of *life* is unfolded from the multidimensional order of the universe. The usual scientific distinctions between life and nonlife are only abstractions. *Life* and *nonlife* are implicately woven into each other.

In the early phases of civilization, man's views were of wholeness rather than of fragmentation. Our fragmentary way of thinking, looking, and acting has implications in every aspect of human life leading to such a crises: psychological, social, political, economical, ecological, etc., in the individual and in society as a whole, such that there is no worth to impose some kind of integrating or unifying holistic principle on this *self-world* view. **Bruno** believed that the world consists of "*monads*", ultimate indivisible units with spiritual and material order in nature. **Leibniz** believed that the world consists of simple units, "*monads*", which are ultimate constituents of everything, possessing neither shape nor size nor divisibility; and since decay pertains to complex and divisible structures, then these monads are eternal and immortal. **Eventics** introduces **eventon**, which has both Bruno and Leibniz monads qualities.

The western philosophy of Kant states that: pure reason is simply incapable of grasping transcendent realities; it only finds that its contradictory can be put with equal plausibility. Eastern philosophy and psychology states that: Reason cannot grasp the essence of absolute reality, and it only generates dualistic incompatibilities.

The perennial (coined by Leibniz) philosophy has as its core the notion of *nonduality*, which means that reality

is neither one nor many, neither pluralistic nor holistic, neither separate nor unified, neither permanent nor dynamic. The ultimate reality is “nondual” or “not-two”, which is translated into our dualistic world with a system of opposites. That is, the Ultimate is a “coincidence of opposites” and we cannot picture a thing *being* itself and *not being* itself at the same time, similar to Schrodinger’s cat experiment to picture cat both dead and alive at the same time. The ultimate realm is formlessness.

The perennial philosophy/psychology presents *being* and *consciousness* as a hierarchy of dimensional levels, moving from the lowest, densest, and most fragmentary realms to the highest, subtlest, and most unitary ones. According to perennial traditions there are six levels of consciousness, each transcends but includes its predecessor:

1. Physical—nonliving matter/energy
2. Biological—living, sentient matter/energy
3. Psychological—mind, ego, logic, thinking
4. Subtle—archetypal, transindividual, intuitive
5. Causal—formless radiance, perfect transcendence
6. Ultimate—consciousness as such, the source and nature of all other levels

In perennial philosophy, all the elements of a given level are equivalent in status. **All in one and one in all—para-holographically.** Holoarchy *within* each level, but hierarchy *between* each level.

There are also some new “supertheories” that include a higher knowledge of unified world view with the claim of philosophy-psychology and transcendental religion-mysticism.

Some scientists have already started to make connections between physics and parapsychology/mysticism by making a connection between mind and matter. But they state in several ways that matter is created out of mind. Eventics states that matter and mind are two different aspect of one unique thing—the **holoevent**. In Eventics, physics works on its own ground and psychology/mysticism works on its own ground. Neither field of inquiries can be an authority in other fields. Any attempt to build a transpersonal model from the physical realm, or to build a physical model from the mystical realm is meaningless. It is in Eventics that all these realms are mixed at the level of holoevent of real world and omnievent of omniwholeworld (superworld).

The *spiritual* mode of knowing with the eye of contemplation is the transsymbolic grasp of the transsymbolic world. In this mode, time and space cease to exist, or all times and spaces exist simultaneously, now, in the eternal moment. We are here in the realm of the Timeless that is All Time, the Spaceless that is All Space. This in some respect is similar to the holoevent of real world and the omnievent of omniwholeworld of Eventics, with no reference to causal laws.

Dilthey introduced Geist (which means both mind and spirit and used by Hegel) sciences, which as the mental and spiritual sciences, include the study of philosophical world views, systems, and psychology, of art and music, of literature and poetry, the science of religion, the

science of law and the state, national economy, and history. Geist-science not only deals with higher realms but also with the grasp and understanding of the physical realm.

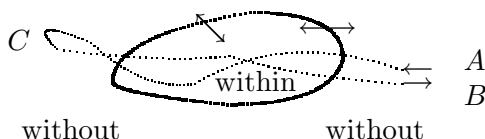
The implicate order of Bohm does not transcend matter—it subscends matter and expresses a coherence, unity, and wholeness of the entire physical realm. It goes beyond explicate order of matter, but in a subscending or underlying manner, not a transcending one, and excludes the higher realms of mind and consciousness. Implicate and explicate orders of Eventics, aim at all levels of super-implicate and super-explicate physical and non-physical realms.

When a concept is adopted, that concept with its *errors* establishes the foundation (root) of our reasoning (scientific or non-scientific). It is therefore impossible for us with that concept to detect (uproot) its errors.

6.1 First Order of Approximation

Man in an effort to describe the events of his apparent worlds in a manageable way, approximates the continuum world by distinct regions of *internal* and *external* worlds, with recognizable inter-relationships, (see Figure 6.1).

We refer to our interaction with external world as observation, which represents the effect of external world on our generalized senses as interpreted by our sensations. This observation, which corresponds to our interaction within the region of our approximation, may not involve the totality of our senses. We claim *experience* from the



The good path, reflected from C , brings the end concept B closer to A in the continuum

Figure 6.1: Inter-relation Path

accumulation of these *observations*. But this experience is so influenced by our senses and foregoing approximations that it should be considered as *prejudice*.

At this order of approximation we discretize our apparent world by the concepts of:

- . World from within
- . World from without
- . Interactive world

Further concept development is associated with either of these classes of inquiries, leading to the introduction of a series of sciences, non-sciences and other fields concerning human knowledge and affairs. Although, there are some similarities between the world view of science and non-science such as mysticism, because of their common origin of holoevent (and omnievent in deeper sense) as the sole reality of superworld described in **Eventics**. But, there are vast differences between them in the way we deal with them in our apparent worlds. Physics, mys-

ticism, religion and etc. stand side by side as the different aspects of human *sub-realities* in apparent worlds. They all ultimately emerge to one unified reality (the omnioevent) of omni-wholeworld via holoevent.

In **Eventics**, *space* and *time* are projections from a higher dimensional entity, and *matter* and *mind* are projections of *matter-mind* continuum. They are all unfolded subtotals of higher dimensions, which eventually end to **holoevent** with countless dimensions in our perception that has no dimension on its own account. Mind and brain, consciousness and matter, mind and body enfolded each other. They are, as the projections of holoevent, neither separate nor the same. The holoevent is reached, via the point of *nothingness*; this is the gate to ominevent of omni-wholeworld, which in common language contains a vast '*sea of energy*'.

The universe cannot be disassembled into simpler and simpler parts. Everything is in dynamic interaction. There is no real hierarchy, no fundamental level of description with other levels stacked on top of it. Instead, there are different levels, each dependent on the others in complex ways. Bootstrap philosophy originated by Geoffrey Chew accepts no fundamental entities, no fundamental laws, equations, or principles, in our apparent worlds. By this theory in the context of S-matrix theory, universe is seen as a *dynamic web* of interrelated events, and none of the properties of any part of this web is fundamental, and overall consistency of their mutual interrelations determines the structure of entire web. The world as expressed by an assemblage of entities is the creation of the human mind and is a limited and approximate conceptual scheme within our apparent worlds. What makes

science so successful is the discovery that approximations are possible. If one is satisfied with an approximate “understanding” of nature, one can describe selected groups of events in this way, disregarding other events that are considered to be less significant. Thus, one can explain many phenomena in terms of a few, and consequently understand different aspects of the apparent world in an approximate way without having to understand everything at once. However, we should realize, as Heisenberg explained, that every concept clear as it may seem to be, has only a limited range of applicability.

6.2 Further Order of Approximations

There are a number of sciences, which deal with man. Natural history, physiology and sociology give *external* views of man. Psychology gives an *internal* view of man. In psychology, we study man as he appears to himself, and we use data, which can only be obtained when the *observer* and the *observed* are the same person. There are important facts, which cannot be known except when the observer and observed are the same person. In a sense, we all have an inner life, open to our own inspection but to no one else's.

To elaborate on different stages of events, suppose you are watching a race, and at the appropriate moment you express your reaction. The complexity of what has happened is almost incredible. This event may conveniently be divided into four stages: first, what happened in the outside world between the runners and your eyes (**phys-**

ical event); secondly, what happened in your body from your eyes to your brain (**physiological event**); thirdly, what happened in your brain (**psychological event**); fourthly, what happened in your body from brain to the movements of your throat and tongue (**physiological event**). The psychological event, owing to our lack of knowledge as to the brain, embodies the results of experience, learning and prejudice. Direct experience is the private affair of each of us. What, in our experience, appears as our voice is the result of physical events in the muscles of our mouths and throats. Such physical events are the concern of pure physics and physiology. The scientists consider: *we can only see things, which are outside of our heads*; while the philosophers consider: *we can only see things, which are inside of our heads*. The scientists usually think in terms of quantities and have a tendency to use word in an objective sense, the philosophers think in terms of qualities and use the word in a subjective sense. Modern scientist speaks of the *space-time concept*, while modern philosopher speaks of the *experience-knowledge percept*.

6.2.1 Science

Practical curiosity ultimately developed into *science*. The major assignment of science of today is to provide descriptions of certain phenomena in the world of man's experience and prejudice. Scientific concepts are free creations of human mind and are not uniquely determined by the external world.

The task of science is to search for unifying descriptions and explanations: search for laws (such as the law

of physics), elements (such as the elements of chemistry), and structures (such as the structures of biology). Of course, law, element, and structures are inseparable as in Eventics. As Whitehead emphasized, **science deals with quantity not quality**. Kant stated correctly that **science could not pierce the veil of appearances**. The special sciences have been all grouped up by the use of notions derived from common sense, such as *things* and their qualities, *space*, *time*, and causation. None of these common sense notions will quite serve as an explanation of the real world; but it is hardly the province of any special science to undertake the necessary reconstruction of fundamentals. This task belongs to **Eventics**.

The philosophical errors in common sense beliefs not only produce confusion in science, but also do harm in ethics and politics, in social institutions, and in the conduct of every day life. Science is concerned merely with *what* happens and what *should*, or is *assumed* to happen, not with what *must* happen. Näive common sense supposes that the objects, such as tables and chairs, are what they appear to be, but that is unjustified since they do not appear exactly alike to any two simultaneous observers; there may be great differences between what you and I see when, as we say, we look at the same chair; nevertheless, we can both express our perceptions by the same words. Each man will end up '*seeing*' the world in the way organized according to his own *schema* or *Gestalt*.

Man, at different stages of his life, tried to describe nature, by three types of explanations—geometrical, mechanical and mathematical:

1. The examples of geometrical descriptions are: In

ancient **Greek**, all motions tend to be circular because circle is the perfect geometrical figure; in **Descartes** system, description of nature in terms of motion, vortices, etc.; in **Einstein** theory of relativity, purely geometrical description of motion, which states moving object or a ray of light moves along a geodesic—a four dimensional curved space-time.

2. The examples of mechanical descriptions in which forces, pressures and tensions are introduced are: **Greeks** claimed the working of nature as a machine; **Huygens** and **Newton** thought that the only possible explanations of nature were mechanical, which was supplemented by **Faraday** and **Maxwell**.
3. Mathematical description as a tool provides a means to understand the nature of the real world. There can be no pictorial representation of the workings of nature that would be intelligible to our limited minds. We can never understand what events are, but must limit ourselves to describing the pattern of events in mathematical terms.

These describe only our observations of nature. Our studies can never put us into contact with reality, and its true meaning and nature must be forever hidden from us; we can never penetrate beyond the impressions that reality implants in our minds.

The goal of **science** appeared to be *analytical*, i.e., the splitting up of reality into ever smaller units. This scheme proved to be insufficient; hence, in modern science it is

replaced by notions like wholeness, holistic, organismic, Gestalt, etc., which signify that in modern science we must think in terms of systems of elements in mutual interactions.

Analytical procedure means that an entity investigated be resolved into, and hence can be constituted or reconstituted from, the parts put together in any sense, conceptual or etc. Analytical procedure is based on two conditions. First, interactions between ‘*parts*’ are non-existent or weak enough to be neglected. Second, reactions describing the behavior of *parts* are linear, when the equation describing the behavior of the total is the same form as the equations describing the behavior of the parts and the principle of superposition holds, i.e., partial processes can be superimposed to obtain the total process. Systems, consisting of parts in interaction, are entities in which the above conditions are not fulfilled. Their descriptions are the set of simultaneous *differential equations*, which in the general case are *non-linear*. The linear world is a world without surprises. It is a clock-work world in which things can be taken apart and rebuilt again. By contrast, the *non-linear* world described mathematically by **Rene Thom**, in his *catastrophe* theory, can be violent and unpredictable.

Our thinking shifts toward rigorous but holistic theories: thinking in terms of facts and **events** in the context of *wholes*, forming integrated sets with their own properties and relationships; looking at the world in terms of such sets of integrated relations constitutes the system view. Science now looks at a number of different and interacting things and notes their behavior as a whole. It takes them in integrated chunks.

The characteristics of ‘**wholes**’ are typical for all groups of interacting parts when the parts maintain some basic sets of relationships among themselves. Such entities exhibit a certain uniqueness of characteristics as *wholes*, which cannot be reduced to properties of their individual *parts*. Each system has a specific structure made up of certain maintained relationships among its parts, and manifests irreducible characteristics of its own.

The science of *energy* conversion and the science of *heat* engines gave birth to **thermodynamics**. There are three stages in thermodynamics:

Equilibrium;
Linear, near-to-equilibrium;
Nonlinear, far-from-equilibrium.

Thermodynamics embraces both physics and chemistry with the concept of **entropy**—the idea that “*the universe is running down*”. The word entropy thought up by **Clausius** (1865) is from the Greek *en-* (in) and *trope* (a turning, change) meaning a decrease in available energy, which takes place whenever energy is transformed from one state to another. Entropy and *oldness* are synonyms in some languages that should not be confused with the aging, which is an artificial entity as a function of our apparent world time. The **first law** of thermodynamics states that the total energy content of the universe is constant, and the **second law**—the *Entropy Law*—states that matter and energy can only be changed in one direction, that is, from usable to unusable, or from *available* to *unavailable*, or from “*ordered*” to “*disordered*”. **Einstein** called it the *premier law* of all of science; **Eddington** re-

ferred to it as the *supreme metaphysical law* of the entire universe. According to this law, in irreversible process, some of the energy would be converted into ‘*unavailable*’ form—toward a ‘*dissipated state*’—i.e., the total entropy is continually increasing. You cannot run the universe backward to make up for entropy. In this sense there is a directionality, or as called by Eddington, an “**arrow**” in “time”.

Prigogine invented a science of **becoming** extending through chemistry and biology, by starting out with thermodynamics. He called the far-from-equilibrium states the “*dissipative structures*”. Vortex formed in a turbulent river due to a slight disturbance is an example of far-from-equilibrium or dissipative structures. To dissipate entropy requires a constant input of energy and new materials, which is why dissipative structures must form in energy-filled, far-from-equilibrium situations; (a vortex wouldn’t form in a still pond).

Another concept in science is General System Theory introduced by **Bertalanffy** in 1945, which represents a ‘*paradigm*’ in scientific thinking. There are three main aspects to the general system theory:

1. **System science**, i.e., scientific exploration of theory of systems in the various sciences. General system theory is scientific exploration of ‘*wholes*’ and ‘*wholeness*’.
2. **System technology**, i.e., the problems arising in modern technology and society from hardware of computers to software of theoretical developments.
3. **System philosophy**, i.e., the reorientation of thought and world view as a scientific paradigm.

The concept of system constitutes a new paradigm or a new philosophy of nature.

The subject matter of General System Theory is formulation and derivation of universal principles by the convenient definition of the concept of system, which are valid for '*system*' in general. These principles apply to generalized systems, whether they are of physical, biological or sociological nature, irrespective of their particular kind, the nature of their elements, and relations (forces) involved between them. In the biological description of nature we refer to *inorganic*, *organic*, and *supraorganic* to describe different levels of reality.

Various approaches of systems theories are:

1. **“Classical” system theory.** It applies calculus (classical mathematics) to state principles, which apply to system in general or to subclasses (closed or open systems).
2. **Computerization and simulation.** It derives sets of simultaneous differential equations to model or define a system that are tiresome to solve, if linear, and are unsolvable, if nonlinear, except in special cases. Computers have opened a new approach, which facilitates the calculations, simulates experiments, and provides the most powerful means of symbolic mathematical systems analysis.
3. **Cybernetics.** It is the theory of control mechanisms in technology and nature, founded on the concepts of information and feedback is a special

case of general theory of systems showing self-regulation. It is based on communication (transport of information) between system and environment and within the system, and on control (feedback) of the system's function in regard to environment. Feedback mechanism is the basis for operation of all servomechanisms. The cybernetics model is apt to describe the formal structure of regulatory mechanisms, by block and flow diagrams. The system is a "black box" defined only by input and output. Therefore, the same cybernetic scheme may apply to physiological, electric, hydraulic, etc., systems.

4. **Compartment theory** is the theory of systems consisting of subsystems with certain boundary conditions between, which transport processes take place. One example is the finite element modeling.
5. **Set theory.** The general formal properties of systems. Closed and open systems, etc., can be axiomatized in terms of set theory.
6. **Topology or relational mathematics**, including non-material fields such as graph and network theory. **Graph** theory elaborates relational structures by representing them in a topological space. It applies to those problems that concern with topological properties of systems. Mathematically, it is connected with matrix algebra, and model-wise it is connected with compartment theory and open systems. **Network** theory is applied to systems with network, and it is connected to set, graph, compartment, etc., theories.

7. **Decision theory** is a mathematical theory concerned with choices among alternatives.
8. **Information theory** is based on the concept of information, defined by an expression isomorphic to negative entropy of thermodynamics, that it may be used as measure of organization.
9. **Theory of automata**, is the theory of abstract automata, with input, output, possibly trial-and-error and learning. A general model is the turning machine, which is capable of imprinting or deleting “1” and “0” marks on a tape (digitization). Any process with whatever complexity can be simulated by a machine, if that process can be expressed in a finite number of logical operations. Whatever is possible logically in an algorithmic symbolism, also can be constructed by automation, i.e., an algorithmic machine.
10. **Game theory**, is concerned with the behavior of supposedly “rational” players to obtain maximal gains and minimal losses by approximation strategies against the other player (or nature).
11. **Queuing theory**, concerns optimization of arrangements under conditions of crowding.

General system theory concerned with *scientific* thought introduced new conceptual models—the generalization of scientific concepts and models that are of interdisciplinary nature. According to this theory, at the scientific level there is no unique and all-embracing “world system.” All scientific concepts are models representing

certain aspects or perspectives of reality. In practice, some combinations of different models are also considered. Classical physics developed the theory of unorganized complexity. Modern science deals with concepts of organized complexity, such as organization, wholeness, directiveness, teleology, and differentiation, which occurs in physics, biological, behavioral, social sciences.

By the way of the general systems theory, the structural similarities or isomorphisms in different fields become apparent. These so-called similarities appear by virtue of introduction and separation (discretization) of these fields. They all derived from a single source of **holoevent** where even the word similarity has no meaning.

Jantsch made a synthesis of **Prigogine's** theory with **Bertalanffy's** system theory, along with physics and neurophysiology, urban planning and others, and called it **co-evolution**. Co-evolution is the dissipative-structure approach to the origins of species of **Darvin's**. He pictured the universe as a cosmic dissipative structure, but he has gone through the full circle and challenge the conclusion of thermodynamics—that the universe is running down.

Eventics is concerned with the holistic aspect of **event** (reality) and deals with “**wholeness**” where the disintegrated models are not introduced in the first place. **Eventics** deals with *becoming* (**event**) as a natural whole in its original quality, containing all systems aspects described by the *system theory* and *co-evolution* theories, whereas these theories make effort to integrate the separated fields of inquiries outlined above by the scientific method.

6.2.2 Philosophy

The name philosophy implies the *love of wisdom* (ancient terminology). It entered into the fundamental structure of the world and the principles governing the order of events. Philosophy has grown out of intellectual curiosity. The initiators of this plan to apply reason to human affairs and concerns lived in Ionia, a Greek settlement in Asia Minor. The Greeks conceived of law and order in nature and made attempts to secure a rational explanation of nature. This is clearly expressed by **Anaxagoras**: “*reason rules the world.*” During the medieval age, when Christianity appeared and conquered the world, the percepts of religion replaced philosophy. During the Renaissance, the writing of **Copernicus**, the speculations of **Bruno** and the observations of **Galileo** built a new world view that became scientific by **Galileo**, **Kepler** and **Newton**. Nature no longer was interpreted as a collection of animated personalities. This brought a beautiful simplicity into inanimate nature, but also brought another simplicity called materialism with **Hobbes** as its principal advocate. Its central doctrine were that the whole world could be constructed out of *matter* and *motion*; that is, matter was the only reality, and *events* of every kind were simply the *motion of matter*. Renaissance philosophy was eventually modified and led to the present day philosophy.

Philosophy dealing with the overall aspect of Events, should be a continuing activity, not something in which we can achieve final perfection once and for all. Theological dogmas are fixed, and are regarded as incapable of improvement. Philosophy should not suffer from its association with theology, and should be piecemeal

and provisional like science and be satisfied by gradual approximations.

Western philosophy created from Greek philosophy is the philosophy of dualisms. These include: The dualistic knowledge wherein the universe is served into subject vs. object is the very cornerstone of philosophy, theology, and science. The dualism of truth vs. falsity is called logic. The dualism of good vs. evil is called ethics. The dualism of appearance vs. reality is called epistemology. Furthermore, Greeks initiated the study of ontology, the examination of the ultimate nature or being of the universe with inquiries around dualisms of the one vs. the many, chaos vs. order, simplicity vs. complexity.

In *perennial* philosophy, it is realized that mystical consciousness, subject and object, become one in the act of knowing. This suggestion is a step toward **Eventics**. In the mystical consciousness, reality or event is apprehended directly and immediately, meaning without any mediation, any symbolic elaboration, any conceptualization, or any abstraction; *subject* and *object* become one in a **timeless** and **spaceless** act that is beyond any and all forms of mediation. Mystics speak of contacting reality in its '*suchness*', its '*isness*', its '*thatness*', without any intermediaries; beyond words, symbols, names, thoughts, images, etc. Eventics states the same fact without being just the mysticism alone.

Quantum mechanics attacked the very cornerstone of the foundation of classical physics, which comprised the subject-object dualism. The subject cannot tinker with the object; the measured object could never be completely separated from the measuring subject. The measured and the measurer, the verified and the verifier are

one and the same, the subject and object are ultimately one and the same thing. We cannot observe the course of nature without disturbing it; observation means interference with what we are observing; observation disturbs what is reality to observer. This is well accepted in quantum mechanics.

The *philosophy of mind* has acquired new life from recent work in *cognitive* psychology, *linguistics*, and the *information* sciences. Now, there is extensive interchange between philosophers of psychology and cognitive psychologists. They both address questions about thinking, perceiving and imagining, which is a positive step toward Eventics.

6.2.3 Physics and Psychology Matter and Mind

Popular metaphysics divides the known world into *mind* and *matter*, and a human being into *soul* and *body*. Materialists have said that matter alone is real and mind is an illusion. Idealists in the technical sense, or mentalists, have taken the opposite view, that mind alone is real and matter is an illusion. Actually both mind and matter are our convenient expression for the more primitive stuff, which is neither mental nor material. Mind and matter are to be regarded as different autonomous orders within the one whole event—the **holoevent**. Consciousness, which includes thought, feeling, desire, will, etc., and involves awareness, attention, perception, acts of understanding and many more, is not fundamentally separated from matter. Both are abstractions from the holoevent and can be understood together in terms of the

general order of unbroken wholeness of *holoevent*. That is, *intelligence* and *material* process have a single origin, which is ultimately the unknown totality of the *holoevent* and *omnievent* in the deeper sense.

Synergy (*syn* meaning union and fusion), represents the behavior of integral, aggregate, whole systems unpredicted by behaviors of their parts taken separately. synergetics, based on the concept of synergy, develops the integration of geometry and philosophy in a single conceptual system comprehensive to physics, chemistry, arithmetic and geometry with mathematics of topology and vectorial geometry. This integration provides a common language accounting for both the physical and metaphysical events. Synergetics postulates that all phenomena are metaphysical, designated for all weightless phenomena such as *thought*. It deals with our apparent worlds, believing in a synergetic progression in universe—a hierarchy of total complex behaviors entirely unpredicted by the successive subcomplexes behaviors—a serial universe.

The origin of mind and matter is deeper and more inward than any knowable order that could describe them. For example, in intelligent perception, the brain and nervous system respond to an order of unknowable source that cannot be reduced to anything defined in terms of knowable structures. Matter and mind are inseparable entities as nicely entangled in this reference to age: “*age is a matter of mind. if you don’t mind it doesn’t matter.*”

Avicenna (Abu Ali Sinā 980-1037 A.D.), a Persian philosopher and the Prince of Physicians, the author of the masterpiece of peripatetic philosophy—*Shifā*, believed in interactions between *soul* and *body*; as he stated: a certain power to alter things indwells in human soul and

subordinates the other things to her, particularly when she is swept into a great excess of love or hate or the like, i.e., when the soul of a man falls into a great excess of any passion, the excess binds things and alters them in the way the soul wants. The interaction between body and mind of human beings is well recognized in many cultures and in practicing medicine. As the author of this book, I have witnessed the positive results of my holistic treatment (physical and mental) of the patients when I was assisting physicians during my high school years, and when I saved (as later confirmed by a specialist) the life of a relative.

Eventics treats the totality of existence, including matter and consciousness as an unbroken whole—a consistent account of the new properties of matter, of the activity of consciousness, and of consciousness relationship to matter. Real stuff is the *holoevent* of real world corresponding to omnievent of omniwholeworld. This real stuff occurs (appears) to us in our apparent worlds as a *series of events*. Of course, Eventics is more than combined physics and psychology.

Fichte (1762–1814) distinguished the world of being by *finite ego* (empirical ego), *non-ego*, and *infinite ego* (pure ego). The pure ego (**atman**, very self, universal oneness) is the innermost active essence of our being. The pure ego is relevant to *holoevent*. The world of our finite being comes into existence for us by a certain real projection—we project time, space and etc. just as we project the sense qualities. The finite ego corresponds to our apparent worlds.

We link the series of events together by a particular arrangement that we call “*causal*” law. Mind and

mental are merely approximate concept giving a convenient shorthand for certain approximate causal laws concerning *events*. This is a task to accommodate our apparent observations, which are regarded as the facts of the world. But, it should be noted that the word '*fact*' is from the Latin root '*facere*' meaning '*what has been made*'. That is, we begin with immediate perception of a situation and develop the *fact* by giving it further *order*, *form* and *structure* with the aid of our theoretical concepts, we '*make*' the fact. Of course, the changes in the theory ultimately lead to new ways of conducting experiments and creating instruments, which in turn lead to the '*making*' of ordered *facts* of new kinds—the circular or *spiral* world. For example, in ancient time, men were led to '*make*' the fact about planetary motions by describing and measuring in terms of *epicycles*. In classical physics, the fact was '*made*' in terms of the order of *planetary* orbits. In general relativity, the fact was '*made*' in terms of the order of *Riemannian* geometry and '*curvature of space*'. In quantum theory, the fact was '*made*' in terms of the order of energy levels, quantum numbers, symmetry groups, etc. Theoretical notions of order help to give '*shape*' to '*fact*'. '*Fact*' and '*theory*' are different aspects of one whole in which analysis into separate but interacting parts is not relevant.

Within the scope of man from without, we take a common-sense view of the material world. *Perception* gives us the most concrete knowledge we possess as to the *stuff* of the physical world, but what we perceive is part of the stuff of our brain, tables and chairs. We may say, when we are looking at a leaf, and see a green patch, that this patch is not '*out there*' where the leaf is,

but is an *event* as the main stuff of our brain and leaf, conceivable by our brain during that time. This implies that “*matter*” has become no more than a convenient shorthand for stating certain “*causal*” laws concerning **events**. Objective experience depends upon physical events, which stimulate sense organs, and depends upon physiological events. Objective experience allows us to draw a picture of both the physical and physiological worlds. We experience events by the physiological processes of brain and physical processes with spatial and temporal orders and so forth as an approximation to the real occurrences. The characteristics of physical realm are *quantity* and *extension*, and the characteristics of mental-psychological realm are *quality* and *intention*.

The **physicist** is interested in the fact that objective experience depends upon *physical events*. The dependence of objective experience upon physical events outside the organism enables the physicist to infer from experience what those physical events are. Physics relates the “*static*” dynamical description to “*being*”, and relates the thermodynamic description with its emphasis on irreversibility to “*becoming*”.

The **psychologist** is interested in the fact that objective experience depends upon *physiological events* in the brain, which contain hints as to the nature of these processes. The functional concepts, which are applied to sensory organization, are useful in the theoretical treatment of these qualities. *Gestalt* psychology concentrates on extended events, which distribute and regulate themselves as functional wholes. Gestalt psychology works with a physiological principle about sensory experience and the more subtle processes: when related physiological events

are taken from their context and compared with their similarities, the resulting logical order must be the same as that of the experience. Gestalt psychology shows the existence and primacy of psychological wholes, which are not a summation of elementary units, such as elementary sensations, and are governed by dynamic laws. It refers to *whole* (more than unification) as well as parts (segregation) and makes use of scientific procedure, namely, the “*analysis*”. Gestalt psychology refers to the meaning of Gestalt as a specific object and organization. But Gestalt refers to both spatial qualities and to temporal qualities, and to combined qualities such as movements. When Gestalt psychology gained acceptance in physics as well as in psychology, it placed **physics** and **psychology** in a new relationship. Gestalt psychology did that by virtue of the concept of *wholeness*. Nativism as in Gestalt psychology with its nativistic chains, believes in heredity and innate understanding. Environmentalism as in learning psychology discusses environment and acquiring understanding by learning. The fundamental categories of understanding are not innate nor are acquired by learning. The concept of Gestalt may be applied far beyond the limits of sensory experience to include the process of learning, of recall, of emotional attitude, of thinking, acting, and so forth. First, when it is applied to cases of experienced *spatial order*, experienced order in space is always structurally identical with a functional order in the *distribution* of underlying brain processes. Second, when it is applied to cases of experienced *temporal order*, experienced order in time is always structurally identical with a functional order in the *sequence* of correlated brain processes.

We have also a conception of *mathematics* in which the central role is played by the human beings and his capabilities such that mathematics may be said to be a branch of *psychology*. Formalists consider mathematics to be a game with symbols. **Hilbert** introduced formalism as a methodological principle. **Hertz**, in the beginning of the introduction to his *Principles of Mechanics*, expressed the formalistic point of view as applied to physics, which also indicates clearly the conformity, the self-balanced, closed-loop and circularity concepts:

“Within our own minds we form for ourselves images (internal pictures) or symbols of the external objects; and the form which we give them is such that the logically necessary consequents of the images in thought are always the images or symbols of the necessary consequents in nature of the things pictured. The images are our conceptions of things. In order to satisfy this requirement, there must be a certain conformity between nature and our thought.”

When a physicist ‘looks at’ quantum world or at relativistic world he is not looking at the ‘things in themselves,’ he is looking at a set of highly abstract differential equations—not at ‘reality’ itself, but at mathematical symbols of reality. Physics deals with abstract and mediate symbols and forms of reality. In the theory of signification, meaning is understood as the relationship between

a signified, which is considered to be an object or an action, and a signifier (index, sign and symbol), which

stands for it.

Eddington stated: the exploration of external world by the methods of physical science leads to a *shadow* world of *symbols*. Piaget believed also, that there are relations between the thought of the child and symbolic thought. This *shadow* world is what is referred to here as *apparent* world. New physics is forced to be aware of the fact that it is dealing with *shadows* and *illusions*, and the scheme of physics is now formulated in such a way as to make it self-evident that it is a partial aspect of something *wider*. However, physics can tell us nothing about this something wider—the **holoevent**. Physics deals with shadows; to go beyond shadows is to go beyond physics, i.e., to go to **Eventics**. The woodcut from Camille Flammarion in 1888 (as shown in *The Mathematical Experience* by Davis and Hersh) depicted an astronomer as breaking through the *shell of appearances* to arrive at an understanding of the fundamental mechanism that lies *behind appearances*.

The brilliant idea of Max Planck in the year of 1900 marked the first crack in the rigid frame of scientific dualism. He proposed that the radiation of energy is not continuous, but comes in discrete packets or quanta. Einstein took Planck's theory and successfully applied it to the photoelectric effect. Bohr applied it to sub-atomic physics. de Broglie, using these insights, showed that matter and energy produced waves. Schrodinger formulated the monumental quantum mechanics. The problem began when the dualistic idea of subject vs. object, of observer vs. event and so on, extended into the world of sub-atomic physics. To measure anything requires some sort of tool or instrument, yet the electron weighs so little

that any conceivable device, even one as “light” as a photon, would cause the electron to change position in the very act of trying to measure it! This inability to pinpoint the “ultimate reality” of the universe is mathematically stated as the Heisenberg Uncertainty Principle. All the aforementioned insights come to full effect in a conclusion formulated by this principle.

The assumption that the observer is separate from the event, the assumption that one could dualistically tinker with the universe without affecting it, is found untenable. In some mysterious fashion, the subject and the object are intimately unified. Eddington refer to it as, “**something unknown is happening and we don’t know what.**” That something is **holoevent** in this book. Eddington called this mode of knowledge as intimate knowledge because the subject and object are intimately unified in its operation.

As soon as the dualism of subject-object arises, however, this “intimacy is lost” and is replaced by symbolism. The customary forms of reasoning have been developed for symbolic knowledge, which falls into the all-too-common world of analytical and dualistic knowledge. And since the separation of the subject from object is illusory, then symbolic knowledge resulting from it is also illusory. The separation between our-self as subject ‘in here’ and a reading page as object ‘out there’ is illusion. Eddington used the word *shadow* in describing the world that physical science is concerned with, which is comparable to apparent worlds in Eventics.

Parallel to epistemological dualism of subject vs. object, there had been the ontological dualism of spirit vs. matter, or mental vs. material. The quantum theory

could not find any material stuff; nor could it find spiritual stuff. Our conception of substance is only vivid so long as we do not face it: it begins *to fade away when we approach it*. We have chased the solid substance to atom, electron and sub-particle and there we have *lost it*. Quantum physics had taken dualism of mental vs. material to the annihilating edge (the point of *nothingness*), and there it had *vanished*. We cannot erect an absolute barrier between mind and matter; and the word “*mind*” and the word “*matter*” should be replaced by the laws of **events**. As Russell put it: the world may be called physical or mental or both or neither as we please. This view is neither materialism nor mentalism and in a narrow sense supports **Russel**’s ‘*neutral monism*’. It is monism in the sense that it regards the world as composed of only one kind of stuff, namely *event* (the *holoevent* in this book).

Parmenides, Zenon and Melissos, believed in monism just as **Spinoza**, **Hegel** and **Bradly** did. To Hegel, nothing is ultimately real except the whole, which is a complex system. Whereas **Heraclitus**, atomists, **Leibniz** and empiricists, had a pluralistic view. According to Parmenides, the universe is a compact *plenum*—one continuous unchanging whole. It is a finite, immovable, indivisible, and continuous plenum (the essential *oneness* of existence)—a static (*being*) view. **Eventics** agrees with Parmenides wholeness as one aspect of the reality and combines that with the *becoming* view, which is another aspect of the same reality. Events that have emerged in our framework are not to be regarded as consisting of motions of bits of matter (matter in motion). Matter and motion are convenient constructions using *events* as their material. We visualize events in terms

of the items that are important to us such as matter and motion, and regard them as the component of the events. Both by the analysis of *physics* and by the analysis of *psychology*, we find that mental and physical occurrences are inseparable ingredient of a single event—the **holoevent**, the footprint of **omnievent** of the omniworld.

6.2.4 Mathematics

A system of symbols related according to pre-established rules is called an *algorithm*. Algorithm is a variation of *algorism*, after **Al-Khowarizmi**—the father of algebra (780–850 A.D.). The simplest example of an algorithm is the mathematical system of decimal notation, popularized by Al-Khowarizmi. An algorithm is essentially a “*thinking*” machine, a means of performing operations on symbols that give results otherwise difficult to attain. The symbolic system of language, and particularly of the artificial languages called *mathematics* and *science*, develops into thinking machines. Calculating and thinking machines, mechanical or electronic, are the materialization of algorithms.

Mathematics deals with quantities and is a body of knowledge, more than a method, an art, or a language. Mathematics is an art with a beauty of its own. Mathematics has been the language of science and is now the body language of Eventics. Mathematics is an indispensable medium by which and within which we express, formulate, continue, and communicate ourselves. It specifies and expresses thoughts and processes of thinking and creates them in turn. It specifies, clarifies, and cre-

ates rigorously workable concepts, and is an indispensable constituent of concepts creation and emergence as well. Mathematics itself is an *event*. The characteristic of mathematics is its symbolic language just as the symbolism in music.

In its broadest aspect and conventional language mathematics is a spirit, the spirit of rationality. It is this spirit that challenges, stimulates, invigorates, and incites human minds to exercise them to the fullest. It is this spirit that seeks to influence decisively the physical, moral, and social life of man, that seeks to answer the problems posed by our very existence, that strives to understand nature and exerts itself to explore and establish the deepest and outmost implications of knowledge already obtained.

Mathematics is a living plant, which has flourished and languished with the rise and fall of civilizations. Mathematics has been a major force in molding modern culture, as well as vital molding element of that culture.

The mathematical techniques are only mathematics stripped of motivation, reasoning, beauty, and significance. Mathematics is also a method of inquiry known as postulational thinking. Mathematics is a creative activity with motive to answer questions arising out of social needs. It is a universal tool and provides a rational organization of natural phenomena, with motive to search for beauty. As **Russell** states: mathematics, rightly viewed, possesses supreme beauty.

Mathematics and physics are to be considered as different aspects of a single universal *whole*. They are not regarded as separate structures. **Jeans** said: we can never understand what *events* are, but must limit ourselves to

describing the patterns of events in mathematical terms. We can mathematize the general language for developing *implicate* and *explicate* orders in a coherent and harmonious manner. Mathematics is not so much about orders in the material world but about the process of thought. This was also supported by **Grassmann**, who developed an algebra of “*becoming*”, and by **Hamilton**. The becoming aspect of mathematics extended by **Clifford** was based on the ideas of Grassmann and Hamilton.

Babylonians—late **Persians**, were the first people to create much of mathematics, and contributed to the main course of mathematics, about 4000 years ago. They left behind thousands of clay tablets written in cuneiform, some of which reveal their number system and their discoveries in algebra and geometry. They developed a superior arithmetic and algebra that is considered to be the source of some of Euclid’s knowledge of algebra. Babylonians covers a series of people, who concurrently or successively occupied the area around and between the Tigris and Euphrates rivers, a region known as Mesopotamia. They lived in **Babylon**, **Susa** the capital city of **Susiana**, Ur, and a few other cities. They worshipped **Anahita**, goddess of the waters and fertility, and **Mithra**, the sun god and god of justice.

Egyptians developed a superior geometry that was founded from soil of Egypt—*geo* meaning earth, *metron* meaning measure. Geometry is ‘*gift of the Nile*’ and ‘*gift of the artists of the city of Susa*’.

Greeks took decisive step in applying mathematics. They stated that the universe is mathematically designed and through mathematics man can penetrate into that design. **Thales** (624-547 B.C.) was the first Greek

mathematician, fathered Greek philosophy, learned the elements of Babylonian and Egyptian algebra and geometry, and discovered the science of geometry. The first group to offer a mathematical plan of nature was led by **Pythagores** (585–500 B.C.). They expressed that mathematical properties are the essence (quiddity) of all phenomena. This essence was found especially in numbers and in numerical relationships. They stated that a number relationship underlie, unify, and reveal, the order in nature. The cream of mathematical work created by the men of the classical period has come down to us in the writing of two men, **Euclid** and **Apollonius**: Euclid's most famous work is **Elements**; Apollonius' major work is **Conic Sections**, which is the (foundational) mathematical means describing the world events. The name Euclid pronounced *Uclides* (*Ucli*-key, and *Dis*-measure or geometry), is equivalent to the *key of geometry*! The application of *Conic Sections* in mathematics and physics is well known by most of us. In addition, **Aristotle** wrote on: mathematics, physics, metaphysics, mechanics, logic, psychology, ethics, economics and many other fields. Historically, **Omar Khayyam** solved general cubic equations geometrically by using *Conic Sections*. **Al-Biruni** (973-1051 A.D.) gave the law of *sines* for the plane triangle and a proof. **Abu'l-Wafa** explored constructions, which used a straight edge and a circle, introduced the *secant* and *cosecant*, and calculated table of sines and tangents for every 10 minutes of angles. The systematization of plane and spherical trigonometry was achieved by **Nasir-Eddin** (1201-1274 A.D.) in *Treatise on the Quadrilateral*.

Greek mathematicians were concerned with teaching

men to reason abstractly and with preparing them to contemplate the ideal and the beautiful. This age has been unsurpassed in the beauty of its literature, in the supremely rational quality of its philosophy, and in the ideality of its sculpture and architecture. The Greek **mathesis** was both “mathematics” and “general knowledge”, which Leibniz tried to re-activate again. The scientific ideal would be a kind of pan-mathematism, which unites the knowledge of the formation of mathematical systems with the laws of living things, in accordance with the need of a *mathesis* of universality.

The emergence of the mathematical concepts of function and derivative advanced mechanics that stood still for almost 2000 years. The mathematical concept of derivative is a master concept, one of the most creative concepts in analysis. Without it there would be no mathematical term for velocity, acceleration, motion, density of mass or any other density, electric charge, gradient of potential, wave equation and etc. Mathematical formulation introduces challenging analogies and unifications. In the analysis, all information is quantitative, expressed in ordinary real numbers.

In mathematics, *analysis* deals with specific operations, namely with differentiation, integration and the mathematical *infinite* in many of its aspects. Its first important concepts are: a function (Leibniz 1692), continuity of a function, derivative (Leibniz 1676) of a function, integral (J. Bernoulli 1690) of a function, infinite sequence and infinite series. To start mathematical statement we impose on the functions some restrictions or *qualifications* to single out classes of functions with some particular features that includes cer-

tain “descriptive” properties such as continuity, differentiability, integrability, bounded variation, etc. By the 17th century, a general function was an expression, which arose by performing a finite number of four basic arithmetical operations on basic functions such as x , x^2 , \dots , $\sin x$, $\tan x$, $\arctan x$, $\log x$ and e^x . Thereafter, certain expressions appeared for certain functions in which an *infinite* that is an unending, succession of operations was involved. The most important ones were the *infinite series*, and in particular, power series, **Taylor series** and Fourier series. A comprehensive concept of function emerged in the first half of the 19th century.

Mathematics provided a firm grip on the workings of nature and understanding by dissolving mystery and replacing it by law and order. Mathematics had demonstrated the capacities, resources, and strengths of human reason. The power of mathematics was appreciated during the Age of Reason, when the mathematical methodology with its concepts were applied to human affairs, such as philosophy, theology, ethics, aesthetics, and the social sciences. The Age of reason is gone, and now to doubt everything or to believe everything are two equally convenient solutions; both dispense with the necessity of reflection.

Number:

Primitive man, like a child, used fingers for check off counting, from which the word *digit* (meaning finger) derives.

Omar Khayyam and **Nasir-Eddin** clearly stated that every ratio of magnitudes, whether commensurable

or incommensurable may be called a *number*, a statement **Newton** reaffirmed in his *Universal Arithmetics* of 1707. **Leibniz** was an advocate of the number system that existed among the primitive men—the *binary* system, i.e., of base two. It is the mystical elegance of the binary system that made **Leibniz** exclaim: “*one suffices to derive all out of nothing.*” As **Laplace** said: **Leibniz** saw in his binary arithmetic the image of *creation*. Leibniz imagined that *Unity* represented *God* and *Zero* the void (*nothing*), just as unity and zero express all numbers in his system of numeration. This notion of Leibniz is well taken in **Eventics** and as it will be seen later, it is incorporated in the foundational principle of **nothingness** of Eventics.

A number is only intelligible if it remains identical with itself, i.e., the assertion of $X = X$, whether it is a matter of: continuous or discontinuous qualities; quantitative relations; or sets and numbers conceived in thought. In every case, the conservation of something is postulated as a necessary condition for any mathematical understanding. Piaget intended to show that conservation is not an innate idea, but is constructed during child development, inseparable from the ideas of quantity and number.

Mathematicians tag numbers in algebra by dual signs (+ and −), representing two directions in a *plane* 0, introducing *two types* of numbers such as +1 and −1, and a functional (not a structural) entity $\sqrt{-1}$. That is, the imaginary $i = \sqrt{-1}$ exists when the mathematician is using it; outside of that, it doesn't exist. **Gauss** introduced the term *complex numbers* and used “*i*” for $\sqrt{-1}$, which led to a branch of mathematics called the *complex variables* that includes the complex numbers in

the complex plane of $z = x + iy$. The advantages of the complex variables analysis is due to the fact that we deal with two variables simultaneously in addition to the special properties of complex functions set forth by **Cauchy**. **Hamilton** introduced the *quaternions* numbers comprised of four components represented by $a + ib + jc + kd$ in which $i = j = k = \sqrt{-1}$ obtained from his famous formulas carved on a stone on Brougham Bridge: $\mathbf{i}^2 = \mathbf{j}^2 = \mathbf{k}^2 = \mathbf{ijk} = -1$. Grassmann created a variety of algebras and numbers what are now called *hypernumbers*.

Another new extension of this concept is given in this book, where two *complex planes* $+1$ and -1 are used that leads to *four types* of numbers (two for each plane) of $\alpha = {}^+1$, $\beta = {}^-1$, $\gamma = {}^+1$ and $\lambda = {}^-1$, and the functional entities $i = \sqrt{{}^-1}$, $j = \sqrt{{}^+1}$ and $k = \sqrt{{}^-1}$. This leads to another branch of mathematics with complex hypernumbers:

$$v = x + iy + jz + kt$$

where the four variables are present simultaneously. This concept can be extended to include the infinite-fold of numbers in place of our present conventional two-fold numbers $+1$ and -1 .

Algebra:

The word algebra comes from a book written in 830 A.D. by Al-Khowarizmi, with the title *Al-jabr w' al-mugabala*. The word *Al* (the) *-jabr* (to set, to restitute) meant “*restoring*” the balance in an equation by placing on one side of an equation a term that has been removed

from the other side. *Al-mugabala* meant simplification of terms. Algebra, in the broader sense used today deals with operations upon symbolic forms. Of course, algebra is in itself a limited form of mathematization. We need ultimately to proceed to other *orders* of mathematization involving '*rings*' and '*lattices*' or to evolve to still more general structures as yet to be created.

Each mathematical symbol corresponds to an operation (transformation and/or metamorphosis). If we introduce a *unit operator* (one which leaves all operations unaltered in multiplication) and a *zero operator* (one which leaves all operations unaltered when added), we will have satisfied all the conditions needed for an *algebra*.

An *algebra* contains key features similar to key features of structures built on *implicate orders*. Therefore, an algebra makes possible a relevant mathematization that can be related to the general language for discussing implicate orders. Similarly, the quantum theory is expressed in terms of linear operators (including a unit operator and a zero operator) and can be put in terms of such an algebra. The real meaning of the *quantum algebra* is that it is a mathematization of the general language.

Clifford algebra, in which every term is *properly nilpotent*, i.e., has the property that some powers of its terms are zero (say $A_n^s = 0$) and remain nilpotent when multiplied by any term of the algebra (so that $(A_i A_p)^j = 0$). An algebra that can be used to describe *invariant* can be obtained from any algebra by subtracting the *properly nilpotent* terms, which is called the *difference algebra*. Every difference algebra can be expressed in terms of the products of a *matrix algebra* and a *division algebra*.

Matrix algebra is an algebra whose rules of multiplication are similar to those of matrices, and division algebra is an algebra in which the product of two non-zero terms is never zero. In division algebra, if the numerical coefficients are taken over the field of the real numbers, there become exactly three division algebras, the real numbers themselves, an algebra of order two, which is equivalent to complex numbers, and the real quaternions. If the numerical coefficients are taken over the field of complex numbers, the only division algebra is that of the complex numbers themselves.

Topology:

Topology as a branch of mathematics, is concerned with those properties of geometric figures that remain invariant when the figures are bent, stretched, shrunk, or deformed in any way that does not create new points or fuse existing points. That is, there is a **one-to-one** correspondence between the points of the original figure and the points of the transformed figure, and with continuity property the transformation carries nearby points into nearby points. A rubber band can be deformed into a circle or a square that topologically is the same, but it is not topologically the same as a figure *eight*. As another example, by tracing a circle on a flat surface, we can preserve the inside and outside areas, but on a doughnut-like surface, inside a circle is its outside.

Exterior Calculus:

Two major branches of calculus are: interior calculus

that deals with the operation of the *dot* (\cdot) product, which has various names of scalar, inner, and direct product such as, $\mathbf{A} \cdot \mathbf{B}$; and exterior calculus that deals with the operation of *cross* (\times) product, which has various names of exterior, outer, vector, skew and the antisymmetric wedge (\wedge) product such as $\mathbf{A} \wedge \mathbf{B}$.

Another important development of geometry during the last 2000 years is: the concept of “*geometric object*”; every physical quantity can be described by a geometric object. This was first presented by Klein and formulated clearly by Whitehead (1932). Points, curves, vectors, *differential form* or “*1-form*”, metric tensor, gradient ∇ in flat spacetime, and symmetric covariant derivative operator ∇ in curved spacetime are geometric objects. “*1-form*,” *first rank* tensor, is a linear function of vectors, and a simple example of that is the gradient or exterior derivative “ $\mathbf{d}f$,” which represents a change in f in an unspecified direction as the elementary “*differential*” number df , but needs a specified directional vector \mathbf{v} to be reduced to a number. \mathbf{d} is called exterior differentiation or exterior derivatives of differential forms. Metric tensor is a machine with two slots for inserting vectors:

$$\begin{array}{ccc} & \text{slot1} & \text{slot2} \\ & \downarrow & \downarrow \\ \mathbf{g} (& & , & &) \end{array}$$

For example:

$$\begin{aligned} \mathbf{g}(\mathbf{u}, \mathbf{v}) &= \text{scalar product of } \mathbf{u} \text{ and } \mathbf{v} \text{ or } \mathbf{u} \cdot \mathbf{v} \\ \mathbf{g}(\mathbf{u}, \mathbf{u}) &= \text{squared length of } \mathbf{u} \text{ denoted by } \mathbf{u}^2 \end{aligned}$$

Mathematics of differential forms is called exterior calculus. Pictorially, differential forms are intersecting

stacks of surfaces. *Differential geometry* and in particular *differential topology* is a branch of mathematics, which uses the geometric objects to study *differentiable manifold*. This mathematics is widely used in modern physics, in particular, in relativistic mechanics. (See *Gravitation* by Wheeler et al. for details).

Operator:

Mathematics essentially means the existence of an algorithm, which is much more precise than that of ordinary language. As discussed earlier, *language* is a highly developed form of **symbolism**. One of the main tasks man has to deal with his apparent worlds has been to bridge between the qualitative and quantitative orders, for which ordinary language and mathematical language have been developed, respectively. The unique word that carries both *quality* and *quantity* features and ties these two languages together, is the celebrated word “**value.**”

All men’s thoughts can be expressed in a concise order by the mathematical operations. Mathematizing is a creative activity of man like language and art. But, the advantage of mathematics is that the phenomena most diverse from a qualitative point of view exhibit identical mathematical properties. As we mathematize language, there will arise orders, measures, and structures within the language. These orders, measures, and structures are different from that perceived in common experience and explicate order. In this language, we do not regard terms like ‘particles’, ‘charge’, ‘mass’, ‘position’, ‘momentum’, etc., as having primary relevance.

The fundamental language of mathematics is the

mathematical operation. Mathematics is an operational technique. That is, it is an operation of an **operator** on an **entity** (function). The *condition* asserted by the operator along with the corresponding **value** establishes the foundation for that branch of inquiry and interest. To express the character of an entity in symbolic language, we make an *operation* on an entity and state the *value*, which that entity assumes by this operation. Mathematically, we use equality expression:

$$\begin{array}{ccc} \mathcal{O} & X & = & \mathcal{V} & X \\ \text{operator} & & & \text{value} & \end{array}$$

For example:

1. $1_{op} X = 1_e X$ or $X = X$ *Unit operator*
operator eigenvalue
2. Vector transform *Linear operator*
3. Differential calculus *Differential operator*
4. Integral transform *Integral operator*
which includes operational
mathematics in complex variables
5. Other familiar operators are:
arithmetic operator; gradient operator;
variation operator, rotation operator.

We have to distinguish the **operator** (a mathematical operation) from the **entity** (a function) on which it operates. The word *transformation* is used to describe a simple geometric change within a given explicate order. The transformation is implemented by: the operators

such as displacement operators, rotation operators and dilatation operators. The word *metamorphosis* is used to describe implicate order in terms of different kinds of operations than translations, rotations, and dilatations. It indicates that this change is much more radical than the change of position and of orientation of a rigid body; it is more like the change from caterpillar to butterfly.

As an example, the mathematical operator of *derivative* represented by d/dx acts on a function—say x^2 gives a new entity $2x$. Certain functions behave in a peculiar way with respect to an operator. Functions (entities) that are merely recovered by a given operator to them are known as the “**eigenfunctions**” of this operator, and the numbers by which the eigenfunctions are multiplied after the operation are the “**eigenvalues**” of the operator. For example, operation of derivative operator d/dx on function “ e^{3x} ” gives “ $3e^{3x}$ ”, i.e., returns to the original function (eigenfunction e^{3x}) multiplied by a number, *eigenvalue* 3.

As another example, the unit operator (1_{op}) acting on an entity (function) X gives a new function X , which is the eigenfunction of unit operator, and unit value (1) is the eigenvalue of that unit operator. This is a process to express the character of entity X (a characteristic function) by the means of characteristic value (eigenvalue). Character is the combination of qualities or features that distinguishes one thing from another. The above conditional (implied in unit operator) identity also contains the foundation of the world of **oneness** that:

In the universe of physical and non-physical
quantity and **quality**, *unity* operation on
any entity gives a *unit* value for that entity.

Actually, the word *universe* is *uni + verse* meaning “turned into one,” derived from the French *univers* and the Latin *universum* and translated from the Greek “*to holon*” (the whole). This *unit operational condition* with the property of **oneness** in the universe is equivalent to the *unconditional* assertion of $X = X$ discussed earlier. Therefore, the entire world of oneness is an eigenvalue problem similar to the frequency analysis in vibrations and wave propagation problems. This is another reason that some scientists refer to *events* as *frequencies*. The **superworld** (omniwholeworld) is mathematically represented by the eigenfunction of the unit operator 1_{op} with eigenvalues of a “single” unit (1) value, which is obtained by repeating the unit operator.

To each operator there corresponds an ensemble, a “*reservoir*” of numerical values; this ensemble forms its “*spectrum*”. A spectrum may be *discrete* or *continuous*. This spectrum is “discrete” when the eigenvalues form a discrete series. For example, a spectrum is discrete for an operator with all the integers $1, 2, \dots$ as eigenvalues; and is continuous when it consists of all the numbers between 0 and 1. All functions (entities) described by vibrations and waves are eigenfunctions with a discrete and a continuous spectrum, respectively. The eigenvalue problem addresses the search for some **entity** (the eigenfunction), which remain unchanged under the action of a known operator, except for multiplication by a scalar constant (the eigenvalue), which is its value for that operator. For example, in vibration problems a mass-stiffness matrix can operate upon the modal amplitudes eigenvectors yielding the natural frequencies eigenvalues. The axes-rotation matrix operates on the principal axes eigenvectors yielding

the principal moment of inertia eigenvalues.

Similarly, the quantum mechanical analysis of atomic systems is primarily an attack on the eigenvalue problem. One of the foundational postulates of quantum mechanics is the principle of *quantized*, which states: information about the system's state resides in an **eigenfunction** rather than in an equation of motion, and the physical observables in a system may assume only such **values** as are defined by the eigenvalues associated with the eigenfunctions. Mathematically, the eigenvalue equation, which also involves derivatives, is:

$$\hat{\mathcal{O}} X = \mathcal{E}_o X$$

or the familiar equation:

$$\hat{\mathcal{D}} \psi = \mathcal{E}_D \psi$$

where \mathcal{E}_o (the eigenvalue) represents the possible values of the observable (the parameter) $\hat{\mathcal{O}}$, and X (the eigenfunction) generates information about the state of the system. The *caret* indicates that a variable (parameter) in classical physics has been replaced by its operator as dictated by the principle of operator correspondence. This last principle states that: for each relationship among physical variables in classical mechanics when *no derivatives* are involved, there is a corresponding relationship in quantum mechanics where the *variables* are replaced by appropriate *operators*. Two examples of the qualitative aspects of the quantum eigenvalue problem are: when the observable item of interest is the **position** x of a particle, then

$$\hat{x} X = \mathcal{E}_x X$$

and when the observable item of interest is the **momentum** p of a particle, then

$$\hat{p} X = \mathcal{E}_p X$$

As far as **Eventics** is concerned, the so-called physical laws described in classical physics are also a set of postulates similar to quantum mechanics. Variables involved in these postulates are to be interpreted as mathematical operators.

In classical mechanics, the state of the system changes in smooth, continuous, differentiable fashion, and the equation of motion furnishes a complete description of the system. In quantum mechanics, the permitted *discrete* states (the quantized states) are defined by an eigenvalue equation. That is, the variables that describe the behavior of particles change by discrete intervals rather than continuous intervals. This implies that the classical mechanics and the quantum mechanics at two separate levels touch naïvely on two different aspects of **continuous** and **discrete** orders of our apparent worlds.

With the use of computer, the scope of mathematics is continuously expanding and tedious operations become simple. This is achieved by application of *Symbolic Manipulation Programs* that can perform mathematics in the symbolics of algebra, calculus, matrices, and tensor analysis. Symbolic Manipulation Programs can be used in developing new mathematical theories. They provide a large and growing knowledge base of definitions and algorithms spanning all branches of mathematics. They can be also expanded to include new definitions, rules, operations, algorithms, etc. Because of the wide scope of Eventics, usage of Symbolic Manipulation Programs is

inevitable for carrying out the Eventics algorithm.

6.2.5 Quantitative Concepts Qualitative Percepts

Quantitative concepts emerge from our practice of applying numbers to what we call natural phenomena. This is an attempt to construct the *relations* between entities in such a way that often we refer to them as the *laws of nature*. This occurs in the realm of apparent worlds in which things could be, at least theoretically, separated from each other and counted. A similar process occurs for the qualitative percepts. However, qualitative percepts come to our attention so directly that we consider them as part of “*nature*”—such as colors and etc. The **Quantum** question is the *physics* aspect of the world from quantization of the world. The **Qualum** question is the *mystical* aspect of our apparent worlds from qualization of the world. For any entity, we first develop a qualitative percept of that entity such as *space-percept* (S_p) and then develop quantitative concept of that entity such as *space-concept* (S_c). Perceptual space is the space of a conscious being who is experiencing or recording sensation. Conceptual space has no existence except in the mind of man who is creating it by thinking of it. However, only by the quantitative concept can we construct *relations* between the entities.

For example, without the derived concept of temperature we have to speak of something as “very hot”, “hot”, “warm”, “cool”, “very cold” and so on. The quantitative concept of temperature increases the efficiency of our vocabulary. This can be done also for colors and etc., as

evidenced by computer usage such that any statement and item is converted into logical binary numbers. The concept of temperature, originally taken as a qualitative expression of heat sensation, became quantitative notion, and finally formed an integral part of the *kinetic* theory of matter.

The advantages of quantitative concepts are so great that no one today would think of proposing to abandon them and return to a prescientific qualitative language. We want to make them more and precise as the science advances. However, we should not fail to realize that quantification (counting and measuring) is a human activity imposed on our knowledge of reality. The quantitative concepts enable us to formulate quantitative laws. Expressing man-made nature by quantitative concepts—concepts with numerical values—we set up procedures for arriving at those values. The simplest way is counting. Based on our ten fingers we adopted the *decimal* number system—**man is the measure of all things**. The more refined procedure is measurement. The quantitative concepts give values that: are expressed by rational numbers (integers and fractions) and irrational numbers, and makes possible the application of powerful mathematical tools, such as *calculus*, and increases the efficiency of the scientific method. This is increasingly noticeable by the advancement of computer technology and its applications.

Both summative and constitutive characteristics are pertinent to our concept development. *Summative* characteristics of an element are obtained by means of summation of characteristics and behavior of elements in isolation. Examples are weight, and heat as the sum of

movements of molecules. *Constitutive* characteristics are those that are dependent on specific relations within the complex, such that we must know not only the parts, but also the relations between them. An example is stress-strain relationship in an element.

We have concepts, such as length and weight whose magnitudes can be combined or joined to produce a new magnitude. These are called **extensive** magnitudes. There are also other concepts to which this operation does not apply, such as temperature, pitch of sound and hardness of bodies; those are called **inextensive** or non-extensive magnitudes. Spatial length, for example, is extensive magnitude, i.e., by joining two line segments, a and b , we have:

$$L(a * b) = L(a) + L(b)$$

Some extensive magnitudes are **additive** such as velocity in classical physics, but some extensive magnitudes are not additive, such as relative velocity in the special theory of relativity such that:

$$V_3 = \frac{V_1 + V_2}{1 + \frac{V_1 V_2}{C^2}}$$

which is additive in the first order of approximation $V_3 = V_1 + V_2$ leading to classical physics. Or by dividing both sides by the speed of light C :

$$V_3/C = \frac{V_1/C + V_2/C}{1 + V_1/C \times V_2/C}$$

which is comparable with hyperbolic tangent addition:

$$\text{Tanh}(\theta_1 + \theta_2) = \frac{\text{Tanh}\theta_1 + \text{Tanh}\theta_2}{1 + \text{Tanh}\theta_1 \times \text{Tanh}\theta_2}$$

That is, by letting $V_1/C = \tanh\theta_1$ and $V_2/C = \tanh\theta_2$, then $V_3/C = \tanh(\theta_1 + \theta_2)$ and θ_1 and θ_2 (called rapidity) are additive.

Also, considering the usual concept of length, we can say length is an extensive additive magnitude. That is:

$$L(a * b) = L(a) + L(b)$$

Joining Adding

The customary procedure of *measuring* can be applied to yield a measured value of any positive rational integers and fraction numbers. That is, the *direct measurement* can give only values expressed as *rational* numbers. When we formulate laws, and make calculations with the help of those laws, then *irrational* numbers enter the picture. That is, they are introduced in a theoretical context, not in the context of direct measurement.

The occurrence of irrational numbers is due to the existence of a complex integrated quality of *holoevent* of real world, which is translated into our apparent worlds in terms of *rational* and *irrational* numbers. The irrational numbers occur in terms of non-measurable quantity and *serial* repetitions. When we abandon irrational numbers and work only with rational numbers resulted from direct measurement, we cannot use calculus and formulate laws as differential equations. Hence, the differential calculus conforms to the existence of the irrational numbers in the real world. In that system, space and time dimensions individually are discrete, and the laws of physics would then deal solely with integers of stupendous size. In each millimeter of length, for example, there would be billions of the minimum unit. The

values would be so close to each other that, in practice, we would proceed as if we had a continuum of real numbers. In discrete process the minimum value for length has been suggested as “**hodon**” and the minimum value for time as “**chronon**”.

6.2.6 Space and Time

Space and *time* as instruments created by man are names for the possibilities of certain relationship between occurring **events** in our apparent worlds. The series of events do not occur in pre-arranged space and time. Ordinary relativistic mechanics incorrectly introduces the concept of *event in space-time*; conversely, only **Robb** believed in *space-time in event* and formulated the relativistic mechanics on that basis. But, his approach has been ignored by most physicists. **Eventics takes on space-time in event**. In physics, all the phenomena of physics happen or take “*place*” within the framework of the *space-time* continuum. In **Eventics**, all the phenomena (occurrences) of Eventics in *real* world occur within the **holo-event eventum** and concurrently within the **ominevent eventum** of omniwholeworld.

Space and time are derived from the primitive unified concept of *bulk space* and modern *space-time*. There is no limit mathematically to the number of dimensions a space may possess. It is probably chosen to be three-dimensional based on the perception of our own geometry. Space and time are convenient concepts intended to assist us in acquiring knowledge about the **events** with the hope of accessing the inner secrets of the events. Therefore, in our system of knowledge of physical world,

space and time are to be found in occurring universe as the partial description of the events and certain relationships between them. Separation of space and time is an approximate operation to unified *space-time*, leaving some properties inseparable under any circumstances. It should not be supposed that *time* is another form of *space*, or what four-dimensional space-time has the quality of our usual space and time. It is an entity with four dimensions. We can construct mathematically a hypothetical world of n spatial and m temporal dimensions, and we can tell what can happen in that world. But, we have no possible answer to what that world would be like in our present human understandings. It is interesting to note that **Hinton** expressed in 1880 that, space is four-dimensional (x, y, z, w) and time is two-dimensional (t, s), and questioned why not higher dimensions. **Dunne**(1959) introduced *serial time* with infinite dimensions, and Dobbs introduced “*complex time*” in a sense similar to the two-dimensional time of Broad. In complex time, the usual temporal dimension is called “*transition time*” and the imaginary quasi-spatial time of Minkowski is called “*phase time*”:

$$t_c = t_1 + i t_2$$

The original *mixture* entity of space and time was very obscure and analogous to the pre-personal concept of space and time in the early stages of child development. Then, man in searching for simplicity developed the concept of separation of space and time in order to interpret the events within the scope of his understanding, whereby he can benefit toward his advancement. However, the separate concepts of space and time gave man a

very narrow picture of his apparent worlds, and provided him only with limited knowledge about the events. As a result, he tried to improve his position by introducing a new entity—a special mixture of space and time, called *velocity*. By means of these three concepts he hoped to achieve better insight about events. Eventually, modern physics wove these three concepts together and established a unified concept of *space-time* that contains only a special mixture of space and time, i.e., the speed of light, in which the spacelike cut (slice), for example, through spacetime gives a momentary configuration of space. And finally, on the same ground, physics generalized this idea by introducing the concept of *metric*, which serves a general unification of space and time. Similarly, **Wheeler** developed the concept of *superspace*, in which various space configurations are represented by points within superspace such that the spacelike slices through spacetime lie on a single bent leaf of history and cutting its thin slice through superspace. Nevertheless, the original concept of mixture of space and time was more complex and has not yet been accommodated.

According to **Kant**, *space* is largely a creation of our own minds, and space and time are not objects we observe, but ‘forms’ to which experience must conform if it is to be intelligible. **Newton** imagined *time* in the same manner as his predecessor, and to carry out his dynamics he assumed: absolute, true and mathematical time of itself and from its own nature flows equally without relation to anything external, although, “*flow*” must be considered with respect to a reference frame. He *assumed* it this way in order to formulate equations of motions, and then and only then could he say, ‘a train will be at

this station at 7 pm'; otherwise, if he had an accelerated time (clock), then the train will be there at 11 pm (say). **Einstein** postulated that the speed of light, as the fastest communication, is the same for all observers at rest or moving uniformly in a straight line. Therefore, in both **Newton's** and **Einstein's** physics, it is assumed that *space spreads uniformly* in a space continuum, and *time flows uniformly* in a time continuum.

Our common-sense concepts of space and time had to be considerably modified when the behavior of matter at very small distances was investigated. The usual concepts of the separate space and time are unacceptable; instead, they must be combined into a four-dimensional space-time continuum. On the other hand, over very large distances and for large masses, space-time becomes distorted by the *matter* present. Similarly, other conditions require other modifications to our concepts. Space has been considered as a continuum (*manifold*) that can be covered by a *complex*, which is a form of explicate ordering of space. At the ultimate extreme, supercollapsed objects or black holes can make *time* stand still in their vicinity. It is also true to say that *time* in the microworld will never be the same as time in the macroworld. In our everyday world, time is continuously measurable. But, in the world of subatomic particles, time is manifested as a mathematical symbol, entirely unrelated to the time measured by a wrist watch.

Space is not just a simple "container". It is the totality of the relationships between the bodies we perceive. This is true for time and for inseparable whole space-time.

At **holoevent** the idea of common *time* makes no

sense, since there exists absolutely nothing around that can be used to mark it off with. That is, when there are no series of events, then there is no time, and the question of simultaneity comes about only in our apparent worlds where we have the series of events and the introduction of time.

The usual relativity theory uses the *space-time* continuum and is concerned with one aspect of the physics. The quantum theory, in a sense, uses the separate concepts of *space* and *time*. Both theories introduce some relational concept between *space* and *time* variables and bring about certain advancements in science. However, these theories do not go far enough as required by **Eventics**. These radical alterations of our common-sense expectations have been forced upon us by our use of the scientific method. Alterations in our mode of explanation of the universe have always been due to a clash between predictions made by our scientific theories and actual experimental observations.

6.2.7 Units of Space and Time

To develop the concept of length we need to introduce a unit of measurement. Customarily, we choose a relatively rigid body as our standard measuring rod because this choice resulted in a greater **simplicity** of our “*natural*” laws. With our present knowledge, if we choose to take a rubber rod as our unit of length, we would find very few bodies in the world that were relatively rigid to our standard, and our description of nature would, therefore, become enormously complicated. For this purpose we need a rigid body that always remains exactly the same

length, and one that will not alter its shape or size. However, a “*defined*” *rubber-like* unit of length and time could bring some new descriptions of the world within the human knowledge or make some existing ones simpler, although the circular process of defining this unit is very complex. In such a system of units, some motions, for example, appear motionless, similar to, but not the same as the idea of relative motion with respect to a moving reference frame. There is no logical reason preventing us from choosing the *rubber-like* rod for measurement and then paying the price by developing a complex formulation to deal with a world of enormous irregularity. Therefore, the choice is *conventional*.

Similarly, if we choose a length as our unit, regardless of changes in its temperature, magnetism, velocity and so on, then we are again confronted by a complex process. Therefore, in physics, for simplicity, we introduce correction factors depending on such changes, and deal with “*natural*” laws corresponding to a relatively rigid body measurement. For example, we formulate the “*natural*” laws based on a rigid length L_o at normal temperature T , then we introduce a correction factor for the length at different temperature by the following linear relationship or other higher order relationships:

$$L = L_o[1 + \alpha(T - T_o)]$$

Therefore, two lengths are additive only when they have the same conditions of temperature, magnetism and etc. Let us define a rod as rigid when the distance between any two points marked on the rod remains constant in the course of *time*. But, we would have to introduce the concept of length in order to determine that the

length remains constant. It is seen that the constancy of length depends on the concept of time, temperature and other items. Therefore, we are trapped in a sort of circularity. To escape this vicious circle, we adopt the approximation procedure, and start out with a *relative* instead of an *absolute* concept. We find, empirically, that there is one very comprehensive class of bodies that are approximately rigid relative to each other. Conveniently, we live in the apparent worlds where all metals are relatively rigid with respect to each other. Then, by iterative operation we take one of metals as the rigid body measurement of our standard unit.

With respect to time measurement we also have to go through iterative operation and adopt an approximate standard of unit. The joining operation of time intervals is very complicated, because time as a separate entity does not have a hard edge that can be put together to form a straight line. For example, there is no way to join the intervals of two separate events that have occurred not adjacent in time. The best we can do is to represent the two time intervals on a conceptual scale. Suppose we have two events a and b , and that the initial point of b is the same as the terminal point of a so the two events are adjacent in time. In a conceptual way we join these two intervals as:

$$t(a * b) = t(a) + t(b)$$

To determine the unit of time we use some type of periodic process involving a sequence of events. But, we have to have a method for determining equal intervals of time of successive occurrences. In this case we are also so trapped in a sort of circularity that we adopt an

approximation procedure based on iterative operation.

Consequently, our choice of measurement of length and time is a matter of *convenience* and *assumption* in trying to obtain a simple description of the world. It is our passion for **simple** laws that has induced us to adopt them regardless of the *inner* quality of **holoevent** of the real world.

Chapter 7

Eventics of apparent worlds

In apparent worlds, everything starts out from dualism: when we even express a “word” we imply the dualism of “that word” and “non-that word”. A point on a sheet indicates that point as one and the background sheet as the second (dualism) point.

In our simplified apparent worlds, by the influence of our separated senses we introduce a series of concepts in connection with a series of events. Advancement of our knowledge in the domain of our apparent worlds leads us into the *unification* of these concepts and the establishment of a more fundamental concept in our apparent worlds as an interweaving *bundle* of all of our concepts with *holistic* properties. This fundamental concept can be referred to as a *bundle of events* E_b . As we approach the **holoevent**, this fundamental bundle of concepts converges to **nothing** because none of our senses apart has any meaning in the real world of holoevent, and our con-

cepts including our own “*existence*” vanish in the context of the real world, (see Figure 7.1). When we view the world by our prescribed tools (our concepts) we will approach **nothingness** as approaching the beginning and the end. Then, our apparent worlds are dependent upon what horizon we aim to view. As Lao Tzu said: **endless** the series of things without name on the way back to where there is “nothing”. It should be noticed that nothingness (that contains everything) is opposite to nihilism (that denies everything).



Figure 7.1: Bundle of Events

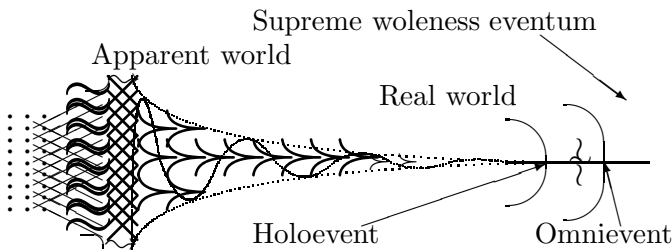
Then, we must be transposed to *nullity* by approaching the *holoevent* and by entering into the real world, for there are no apparent worlds in the domain of real world. This is the main proposition of **Eventics** in the domain of our apparent worlds, which constitutes the fundamental principle of nothingness in Eventics.

7.1 PRINCIPLE OF NOTHINGNESS

Eventics of our apparent world begins with the following *principle of nothingness* describing the events in our apparent world:

**The bundle of the series of events
of our apparent world responsible
for all our concepts converges to:**

NOTHING.



This principle symbolically can be expressed in the following way. *Nothingness* is symbolically expressed by the symbol of *cipher* (0). Now, when the subject of concern is the nothingness, the unconditional assertion $X = X$, or the conditional world **oneness** described earlier is expressed by:

$$0 = 0$$

or

$$0 = \textit{Nothing}$$

where, “**Nothing**” represents the qualitative approaching value for the bundle of events $\mathbf{E_b}$. Our universe is filled with nothing or *no-things* (left side), it is a vast field of *no-thingness* in which everything *is* (right side); then:

$$0 \underset{\text{approach}}{\overset{\text{holistic}}{\asymp}} \mathbf{E_b}$$

in which the bundle of events $\mathbf{E_b}$ is a holistic mixture of the series of events occurring in our apparent worlds:

$$\mathbf{E_b} \underset{\text{system}}{\overset{\text{holistic}}{\asymp}} \underbrace{\left(\odot \underset{\text{system}}{\overset{\text{holistic}}{\bowtie}} \odot \underset{\text{system}}{\overset{\text{holistic}}{\bowtie}} \odot \underset{\text{system}}{\overset{\text{holistic}}{\bowtie}} \dots \right)}_{\text{holistic system assemblage}}$$

which reads: the bundle of events $\mathbf{E_b}$ is a holistic system of the holistic system assemblage of series of events. Symbol (\asymp) is a replacement for ($=$) and symbol (\bowtie) is a replacement for ($+$), and (\odot) represents the conceptual entities.

With the advancement of our knowledge, this bundle of events $\mathbf{E_b}$ ultimately is solidified into the **holoevent**, and is expressed by a single whole entity when it becomes out of the grasp of human beings and turns to nonexistence (nothing) in his framework. The basic element (**eventon**) of the holoevent is *all-things–all-times–all-places–matter–mind–past–now–future–everytime–here–there–everywhere–others*

However, our tendency is toward the resolution of events into independent elements by bypassing the relations between them, namely, decoupling them and replacing the

symbol $(\overset{\text{holistic}}{\boxtimes}_{\text{system}})$ by $(,)$. This is similar to the “grating” or “sieving” in classical physics classifying the world by state and substates corresponding to the elements of the aggregate.

For example, physics, dealing with physical events, considers *matter event* in isolation and transfer it to our apparent world by simplest possible form of transformation, using the constant speed of light c , in the form of *material energy* E : $E = mc^2$. In this sense, the *material energy* E and *mass* m are not just inter-convertible; they are intended to be the same thing with different units, using the constant speed of light for their unit adjustment. The process of transformation here is a special case of the operational technique (arithmetical and functional) in which only the multiplication operation of the arithmetical operation is utilized.

In a more general case, the combined *matter* and *mind* can be taken up, and by some operational technique the *material-mental energy* can be introduced.

7.2 Eventics of Human Concepts

In the apparent world of human knowledge the bundle of event $\mathbf{E_b}$ is conveniently discretized by the holistic lump ($\overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \text{) of the series of events. Thus far, based on our present knowledge, capabilities, and understanding, we have proceeded with the series of approximations by the following discrete representations.}$

$$\{\text{Physical events } \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \dots\dots\}$$

— world from without —

$$\begin{array}{l} \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \{\text{Psychological events} \\ \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \text{ Religious events} \\ \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \text{ Mystical events } \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \dots\} \\ \mathbf{E_b} \overset{\text{holistic}}{\underset{\text{system}}{\asymp}} \end{array}$$

— world from within —

$$\overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \{\text{Social events}$$

$$\overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \text{ Political events } \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \dots\}$$

— interactive world —

At this level, the serial (in the broader sense) characteristic of the bundle of events E_b becomes evident. This serial order of events, extending to all levels of occurrences, appears in several different categories and plays the essential role in the concept development, using the approximation method. The number of terms in the series and their relationships that appear significant for our investigation depend on the level of advancement of our knowledge. Nevertheless, the **holistic system** theory is applicable to all events of different categories, both individually and as a whole. In this system, everything is deterministic and predictable (pre-established). How precisely we can determine the future depends on how deep we can grasp the holoevent and understand **Eventics**.

When we introduce *time* dimension in our apparent worlds, we commit ourselves: to our *ordinary* perception that the future is undetermined and modifiable by our *will*; or to *classical physics* in which determinism fixes the future as much as the past; or to *quantum mechanics* that indeterminate and statistical propositions infer from the present to the past and from the present to the future. It was correctly suggested by **Dunne** that the future event has, in some sense, already taken place, not in time as we know it, but in the time in which this time unrolls (*unfolds*) itself. The undeterministic world is created by our concept of fragmentation.

Customarily, science views these events as so isolated that it assumes *nullity* is satisfied for each class independently. As a result of this *decoupling*, none of the existing theories, simple or complex, special or general, provide complete descriptions of our apparent worlds, and the *real* world. And obviously, they are prohibited to deal

with **superworld**. This is the task of **Eventics**.

Science, in this context, emphasizes this fragmentation and expresses our thinking in terms of theories. The word *theory* is derived from the Greek *theoria*, which has the same root as '*theature*' meaning to *view*. Thus, theory is a form of *insight*, a way of looking at the world, not a form of knowledge of how the world **is**. Our theories are ever-changing forms of insight, giving shape and form to experience. Experience and knowledge also are one process, which can be referred to as *experience-knowledge* (two inseparable aspects of one whole). Our predictions that come true for us cannot be based on scientific observations alone. Of course, the word prediction, as well as the results of prediction is in reference to our customary time scale. Otherwise, it is a comprehension of that which has occurred, is occurring, and will occur with *no time* element inherent.

The belief that theories give true knowledge about reality as it is leads us to confusion and to approach nature, society, and the individual in terms of fixed and limited forms of thought. We should not regard our theories as a direct description of reality as it is. Every form of theoretical insight introduces its own essential distinctions and differences. We normally treat these differences and distinctions as divisions, implying *separate* existence of the various terms. This leads to the *illusion* that the world is actually constituted of separate fragments, which will cause us to act in such a way, that we do in fact produce the very fragmentation implied in our attitude to theory (a circularity process.) We should regard these differences and distinctions as ways of looking, as guides to perception; then they do not denote separately exis-

tent entities or substances.

Everything is connected with everything else in a delicate and complex web of interrelationships as one whole.

Wholeness is real, and fragmentation is the response of this whole to man's action, guided by illusory perception, which is shaped by fragmentary thought. That is because the reality (*event*) is whole. We have to be aware of the fact that with our *fragmentary* approach we will be answered with the corresponding *fragmentary* response, and with the *whole* approach we will be answered with *whole*. This does not mean an integration of thought or a kind of imposed unity implying another fragmentation. Rather, all our different ways of thinking are to be considered as different ways of looking at one reality (*event*).

No observing system can observe itself observing. The seer cannot see itself seeing. It is for this reason that at the basis of all such dualistic attempts we find only uncertainty and incompleteness: at the foundation of the **physical** world, the Heisenberg uncertainty principle; and at the foundation of the **mental** world, the Gödel incompleteness theorem.

In Christian wording, by St. Bonaventure and Hugh of St. Victor, human beings has three eyes: the eye of flesh, by which he perceives the external world; the eye of reason and mind's eye, by which he attain a knowledge of philosophy, logic, and mind itself; and the eye of contemplation, by which he rises to a knowledge of transcendent realities. Similarly, perennial philosophy describes three realms: the gross (flesh and material), the subtle

(mental and animic), and causal (transcendent and contemplative). The truth in the domain of each eye can be checked only with its own eye. Sensation of physical world, reason and contemplation of world from within, disclose their truths in their own realms. This is the greatest shortcoming of the separation of these realms. Only unified holistic knowledge of Eventical reality will direct us toward the unreachable ultimate truth of holo-event and omnievent. For example, mathematics is a nonempirical knowledge or a supraempirical knowledge. It is discovered, illuminated, and implemented by the eye of reason, not by the eye of flesh. For mathematicians, statements are viewed as statements of logical relationships. As Whitehead said: most of the mathematics is transempirical.

7.3 Physical Events

A CASE OF WORLD FROM WITHOUT

In concerning with world from without, in first order of approximation we are only concerned with the first phenomenon of the bundle of \mathbf{E}_b :

$$0 \underset{\text{approach}}{\overset{\text{holistic}}{\asymp}} \mathbf{E}_b$$

1st order discretization d_1 :

$$0 \underset{\text{approach}}{\overset{d}{\asymp}} \{\text{Physical events}\}$$

and then we expand this “physical events” in serial order by discretizing these phenomena with various order of approximations and by developing the concepts suitable to our level of understanding.

2nd order discretization d_2 :

$$0 \underset{\text{approach}}{\overset{d}{\asymp}} \{(\text{Spacetime matter others}) \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \dots\}$$

3rd order discretization d_3 :

$$0 \underset{\text{approach}}{\overset{d}{\asymp}} \left\{ \text{Space-time} \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \text{Matter} \right. \\ \left. \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \text{Others} \overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}} \dots \right\}$$

4th order discretization and decoupling d_4 :

$$0 \underset{\text{approach}}{\overset{d/d}{\asymp}} \{\text{Space, Time, Matter, Others, } \dots\}$$

where all entities are discretized and $(\overset{\text{holistic}}{\underset{\text{lump}}{\boxtimes}})$ is replaced by $(,)$.

We realize that each order of approximation contains a general mixture of the pertinent concepts in order to approach nullity. However, we *group* (*assemble*) together only those concepts that appeal to us to be within the scope of our apparent worlds. This assemblage is obtained by certain operational technique (arithmetical and

functional “;”) by a whole lump (more than a sum) of set of entities (concepts, and conceptual operations). This set forth the foundation of our apparent world (apparent physical world in this case). Furthermore, normally we simplify the *whole assemblage* (lump) of the entities that has holistic property, as a collection that implies a sum of the parts.

Thus far, in the realm of physical world, science uses: either two terms *space-time* and *matter* of the third order (d_3) with decoupling and a partial holistic view as in the theory of **relativity**, where matter and space-time are interchanged by a **metrical** operation; or three terms *space*, *time* and *matter* of the forth order d_4 as in the **Newtonian** physics. It groups these entities and their derived concepts together by means of operational technique “;”:

By **decoupling** d_3 , i.e., replacing “ $\bigotimes_{system}^{holistic}$ ” by “;”

$$0 \underset{approach}{\overset{d/d}{\asymp}} \{\text{Space-time, Matter, Others, } \dots\}$$

and grouping it:

$$0 \overset{group}{\longleftarrow} \underbrace{\underbrace{\{A[s-t]; Bv; Ca; \dots; \dots\}}_{e_3}}_{e_n}$$

in which velocity v and acceleration a are derived concepts of space and time; and A , B and C contains other concepts such as matter.

7.3.1 Present Physics (Galilean) Third Level Physics

Primitive but scientific man only dealt with first level physics (e_1) where only *space* and *time* were included in the crude presentation of physical world. Ancient crude scientific presentation of second level physics (e_2) included *space*, *time* and *velocity*. These presentations provided very incomplete pictures of the physical events such that physics did not advance very much for several centuries. Since **Galileo**, the importance of the second order relation between *space* and *time*, i.e., *acceleration*, has been recognized, thereby, the first revolution in scientific thought took place. While **Newton** mentioned about the third derivative between space and time, he made no attempt to give it a physical meaning. The neglect of the higher derivatives was because of the belief, in this level of physics, that they are not useful for prediction.

Prescientific man was aware of d_3 order, but only had a vague idea of it. Scientific man before Galileo and after Galileo dealt with d_4 order until **Einstein** introduced relativity theory where a special limited d_3 order in a more definite fashion was taken up. The d_3 order used in modern physics covers classical physics including relativity theory. At this level, thus far, among all possible e_1, e_2, \dots, e_n , only e_3 has been chosen for investigations, which establishes the foundation of physics to date:

$$e_3 : \quad 0 \overset{group}{\Longleftarrow} A[s - t] ; Bv ; Ca$$

in which v is the first order relation between space and time (velocity), a is the second order relation between

space and time (acceleration), and A, B, C are metrical parameters that can include other concepts such as matter (mass). In **Einstein's** general theory of relativity, matter is not an independent substance placed into a pre-existing space and time. His matter is simply an expression of the curvature of space-time. In **Eventics**, and in the five-dimensional order, matter is a certain mode of space-time-matter.

Present day physics, including Newtonian, relativistic and quantum physics and their extensions, are based on this level of approximation to the physical events, i.e., the 3rd level physics. This is a simplistic approach to physics, and since the fundamental definitions considered as the laws of nature attested by our experiments, it often stated that the inclusion of higher order entities makes the physics more complex and fruitless. Nevertheless, all various stages of revolution in scientific development from Galileo to present day are only the results of the different interpretations regarding these entities in above relationship. The term with the acceleration is defined as "inertia force", and various theories and definitions are introduced in physics that are associated with two other terms. Among them are the definition of "active force" and various field theories. This level of physics that includes the term acceleration associated with the wave motions. In this physics, when we admit to the separate concepts of space and time, we integrate the above relation over "time" and introduce the "momentum" equation; and similarly we integrate that relation over "space" and introduce the "energy" equation. Therefore, the most influential concept that draws attention of all from laymen to scientists, i.e., the concept of

energy, is a derived concept. It is a convenient definition that comes to existence by the integration operation of the above approximate relation committing to the separate concepts of space and time. In spacetime physics, the energy and the momentum would entangle. In spaceless world, this concept of energy is meaningless. In this physics, we assure the full decoupling of mass and acceleration by assuming the acceleration to be independent of the mass. As a consequence, we reach the assumption of the equality of the defined gravitational mass and the defined inertial mass—the so-called “principle of equivalence”.

Newtonian, relativistic and quantum physics are theories, and all of these theories are inconsistent. Both quantum and relativity theories imply, in a shallow sense, the unbroken *wholeness* of universe, rather than the analysis into independent parts. In relativity, movement is continuous, causally determinate and well defined — existence of separate events connectable by signals. In quantum mechanics, movement is discontinuous, not causally determinate and not well defined—committed to a well defined quantum state. However, in quantum theory, the latest in modern physics, and there is no consistent notion of what reality may be that underlies the universal constitution and structure of matter or event. Newtonian mechanics and its variations Lagrangian, Hamiltonian and Variational mechanics take on Cartesian order, a coordinates system, which is suitable for an *analysis* of the world into separately existent parts (particles or field elements). The word ‘*coordinate*’ implies a function of ordering. This ordering is achieved with the aid of a grid. Therefore, Cartesian coordinates system should not be

applicable to relativity and quantum mechanics if they imply the unbroken wholeness of the universe. Hence, the Newtonian assumptions are more consistent than the relativity and the quantum theories.

Physics uses the above relational concept as its foundation in an attempt to provide a scientific description of apparent physical world. In physics we adopt several special functional operations that make the decoupling of functional and arithmetical operation possible:

NEWTONIAN PHYSICS

This is the most simple case in which the terms are functionally normalized and reduced to same quality that physically and arithmetically are additive by arithmetical operation (+):

$$e_3 : \quad 0 = A[s - t] + Bv + Ca$$

which is referred to as the *equation of motion*. In Newtonian mechanics, as discussed later, $C = -M(\dot{\mathbf{x}}, \mathbf{x}, \tau)$ is assumed to be constant and defined as a constant inertial mass m . (See Appendix A for a new “physical” interpretation of Newtonian mechanics, and in particular the consequence of the definitions of *inertial mass* and *inertia force*).

Newtonian mechanics expresses three laws: “A body in rest remains at rest and a body in motion remains in uniform motion in a straight line unless acted upon by an external force; the acceleration of a body is directly proportioned to the applied force and is in the direction of the straight line in which the force acts; and for every force there is an equal and opposite force in reaction.”

These so-called Newtonian “laws” are contained in the above expression e_3 , which become explicit by analyzing the terms of that expression:

First: Ca is defined as “force” or the **inertia** force that constitutes the second law of mechanics:

$$\text{Inertia force } F_i = C a = -m_i a$$

in which m_i is defined as the inertial (inert) mass.

Second: The negative of $\{A[s - t] + Bv\}$ is defined as “force” or the **active** force:

$$\text{Active force } F_a = F_a(v, s, t) = -\{A[s - t] + Bv\}$$

Third: by substitution we obtain what is usually described as the third law of mechanics, and the equation of motion of Newtonian mechanics:

$$0 = F_a + F_i$$

or

$$0 = F_a(v, s, t) - m_i a$$

or

$$\begin{array}{ccc} F_a(v, s, t) & = & m_i a \\ \text{active} & & \text{inertia} \end{array}$$

For example, in the case of the gravitation the active force F_a is defined as:

$$F_a = \left(- \frac{G M}{r^2} \right) m_g$$

in which, G is a universal constant, M is mass of the earth (in the case of Newtonian mechanics), r is the separation distance and m_g is defined as the gravitational mass. This is the Newtonian gravitational force law, which indicates a particle of zero *gravitational mass* experiences no *gravitational force*. It must be realized that the mass property manifests itself in two opposite tendencies: one is inertial mass in that it *opposes* motion, and the other is gravitational mass in that it *promotes* motion.

Physics introduced several interpretations of F_a , among which the concept of the “field” is the main focus of the physics of today. In the case of the gravitation, the term $\left(-\frac{GM}{r^2}\right)$ is defined as the “intensity of the gravitational field”, then:

$$\begin{aligned} (\text{Intensity of gravitational field}) \times (\text{Gravitational mass}) \\ = (\text{Inertial mass}) \times (\text{Acceleration}) \end{aligned}$$

In this mechanics, to assure the full decoupling of mass and acceleration, i.e., for the acceleration to be independent of the mass, we reach the assumption of the equality of the (defined) gravitational mass and the (defined) inertial mass—the principle of equivalence. Each manifestation of mass is measured in a different way, but the utmost precision of measurement has never demonstrated any difference between the two numeric.

In Newtonian, *time* is reversible, i.e., a moment, whether in the present, past, or future, is assumed to be exactly like any other moment. **Lagrangian** introduces a set of independent coordinates (*generalized coordinates*), denoted by q (for *chameleon*) such that the equation of mechanics involves only *scalar* functions of the coordinates, rather than *vectorial*. Lagrangian is only capable in dealing with *holonomic* system, either conservative or

non-conservative, although able to accommodate some simple *nonholonomic* constraints. When a constraint is expressible as an inequality, then it is classified as non-holonomic. A non-integrable constraint is only a simple nonholonomic constraint that Lagrangian is able to deal with. The holonomic constraint can be either time independent (*scleronomic*) or time dependent (*rheonomic*). **Hamiltonian** replaces the time derivatives of generalized coordinates q by generalized momentum p , which reduces the order of the mathematical system, from second order to first order differential equations. Its feature is that all coordinates become *cyclic*, a system that involves *position* and *momentum* (a *time* order). **Variational** mechanics is based on minimal energy, i.e., Hamilton's principle, which states that a conservative, holonomic system always behaves such that the time integral of its Lagrangian is minimal.

RELATIVISTIC PHYSICS

Relativity as its foundation, normalizes the time variable with respect to the space variable by utilizing the concept of *velocity*, and specifically makes connection between the *measure* of space and time by the constant *speed of light*. The parameter $C = -M(\dot{\mathbf{x}}, \mathbf{x}, \tau)$ is defined as a mass varying with velocity only, in terms of the Newtonian constant *rest mass* M_{rest} and the speed of light c :

$$M = \frac{M_{rest}}{\sqrt{1 - V^2/c^2}}$$

It states that no physical particle (*tardons*) can travel

with a speed faster than the speed of light. Nevertheless, physicists introduced the special particles possessing non-physical imaginary *rest mass* M_{rest}^i (a very different mass), called *tachyons* (from the

Greek *tachys*, meaning swift), traveling faster than light. It also introduces a **metric** (from the Greek *measure*) as the foundation of *geo*-metrical concept of the apparent world. This metric in tensor form is:

$$\mathbf{g}(\mathbf{u}, \mathbf{v}) = \text{scalar product of } \mathbf{u} \text{ and } \mathbf{v} \text{ or } \mathbf{u} \cdot \mathbf{v}$$

or in relation with elementary line element:

$$\mathbf{g} = d\mathbf{S}^2 = dS^2$$

where in a special simple case:

$$dS^2 = ds^2 - c^2 dt^2$$

where, if we use different space (s) and time (t) of different observers we obtain the same value for S (objective). That is, we have an objective situation with regard to all observers and with respect to *real time* t , in which the quantity of interval dS and the form (quality) of dS^2 assumed to be constant. In man made *objective* method in physical realm, the results are the same for all observers. The secret of the minus sign is that without it, we would have *subjective* situation with respect to *real time* t .

And by changing the unit $-c^2 dt^2 = d\tau^2$ or $d\tau = icdt$, it becomes *sym*-metrical:

$$dS^2 = ds^2 + d\tau^2$$

which is a *geometric* interval in the complex variable region of:

$$dS = ds + id\tau$$

as

$$z = x + iy$$

where, if we use space (s) and time (τ) of different observers we obtain different values for S (subjective). That is, we have a subjective situation with respect to *imaginary time* τ .

There are two ways to view dS . First, as a *space-like* quantity with four dimensions of ds and $icdt$, where physics imagines (implied in i) a space-like *time* entity as a “*real*” entity, as in Newtonian mechanics. Second, as the combination of two independent entities in the region of complex variables of “*real*” ds and “*imaginary*” $d\tau$, where physics imagines a complex (imaginary) world as implied in $dS = ds + id\tau$. Therefore, in either case, the relativity physics develops an imaginary apparent world rather than a real world, with a limiting value of speed of light; or mathematically, physics works in a complex (imaginary) region to deal with both **space** and **time** at the same time. The above **form** (quality) for dS^2 is a mere convention and indicated by the apparent world “observation”. dS^2 can be positive, negative or zero. Whereas, if we adopt a different code such as the antilogarithm of dS^2 , then space-interval receives numbers from 1 to ∞ and time-interval receives numbers from 0 to 1. When we encounter $\sqrt{-1}$ in our investigations, we must remember that it has been introduced by our choice of measure-code, and must not think of it as occurring with some mystical significance in the real world.

And e_3 is conveniently written in the following form called *geodesic* equation:

$$e_3 : \quad 0 = \nabla_{\mathbf{u}} \mathbf{u}$$

in which $\mathbf{u} = \partial_{\mathbf{u}}$ is directional derivative operator along a

physical event curve (or tangent vector operator), and ∇ is symmetric covariant derivative operator (a geometric object) in curved spacetime. Geodesic is a physical event curve in curved spacetime that parallel-transport its tangent vector \mathbf{u} along itself.

Using the concept of the geodesic deviation (relative acceleration of geodesics), which measures the deviation of one geodesic from another:

$$\begin{aligned} 0 &= \nabla_{\mathbf{u}} \nabla_{\mathbf{u}} \mathbf{n} + \mathbf{Riemann}(\mathbf{u}, \mathbf{n}, \mathbf{u}) && \text{curved spacetime} \\ 0 &= \nabla_{\mathbf{u}} \nabla_{\mathbf{u}} \mathbf{n} && \text{flat spacetime} \end{aligned}$$

in which \mathbf{n} is the geodesic separation, and in terms of the perpendicular separation of geodesics ξ :

$$0 = D^2\xi/d\tau^2 + \mathbf{Riemann}(\mathbf{u}, \xi, \mathbf{u})$$

And in terms of **Einstein** curvature tensor \mathbf{G} :

$$\begin{aligned} 0 &= \mathbf{G} - 8\pi\mathbf{T} && \text{mass-energy is present} \\ 0 &= \mathbf{G} && \text{"empty" space} \end{aligned}$$

where **Einstein** \mathbf{G} is given in terms of **Riemann** curvature tensor \mathbf{R} , which in turn is derived from connection coefficients $\mathbf{\Gamma}$ that in turn is calculated from metric coefficients \mathbf{g}_1 ; and \mathbf{T} is stress-energy tensor (density of energy-momentum), which is also a geometric object.

The region of the world in which \mathbf{g}_1 is approximately constant is called flat region. The theory of this case is called *special theory of relativity* (Einstein 1905). For a given region where this condition does not hold we refer to it as the *general theory of relativity* (Einstein 1916). The general expression for dS^2 is:

$$dS^2 = g_{ij}dx_i dx_j$$

where in the case of curved space-time $g_{ij} = g_{11}, \dots, g_{44}$ are all non-zero, and in the case of flat space-time only $g_{11} = g_{22} = g_{33} = -1$ and $g_{44} = +1$ are non-zero. This means that the quantity of interval dS and the form (quality) of dS^2 are conserved from one reference frame to another, that is:

$$\begin{aligned} dS^2 &= -dx_1^2 - dx_2^2 - dx_3^2 + dx_4^2 \\ &= -dx_1'^2 - dx_2'^2 - dx_3'^2 + dx_4'^2 \end{aligned}$$

Relativity uses the *speed of light* (as a limit) for its foundation and describes the apparent world by a conical world with a cone of light spread to past and a cone of light spread to future from the source of light. This in a way gives reason for our conical apparent worlds that we live in, where the conical cross sections due Apollonius (ellipse, parabola and hyperbola) with their related mathematical descriptions (elliptic, parabolic and hyperbolic) provide information about the *series of events* in our apparent world. In this context, when gravity acts within the wall of the cone light, we “see” ordinary events. When gravity acts outside of the wall of cone light, we “feel” events in the ways that are normally considered to be impossible. See Figure 7.2.

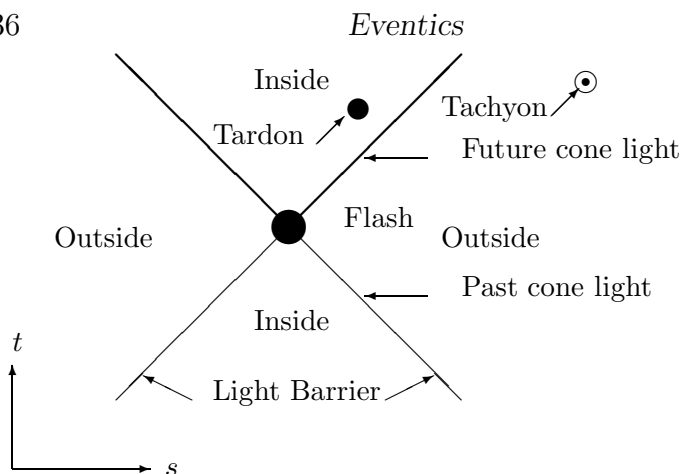


Figure 7.2: Light Cone

At the point of singularity, such as the point of flash, all law of physics relevant to our apparent worlds would collapse whereas Eventics always governs. Physicists know that there it is something other than space-time, but they don't know what it is. That "something" is the **holoevent** (holoreality) of "real" world as described by Eventics.

Beyond the singularity within the black hole is beyond space-time, and beyond the singularity of holoevent is beyond the apparent world. Physics, which deal with space and time or modern space-time, defines *beyond* as the beyond space-time. Whereas, Eventics asserts *beyond* to be beyond any concept that we can ever dream up. Mathematicians cannot describe what is beyond, but they know there is a beyond. "Beyond all concepts including beyond space-time" is non-physical, unmeasurable, and is **Eventical**.

QUANTUM PHYSICS

Heat radiation appears in the form of discrete units or energy packets, Einstein called them “*quanta*” and thus gave quantum theory its name. The quantum mechanical analysis of atomic systems is primarily an eigenvalue problem, governed by the eigenvalue equation obtained from *equation of motion* with a special type of solutions, similar to the *frequency* (modal) equation in Newtonian mechanics. One of the foundational postulates of quantum mechanics is the principle of *quantized*, which states: information about the system’s state resides in an **eigenfunction** rather than in an equation of motion; and the physical observables in a system may assume only such **values** as are defined by the eigenvalues associated with the eigenfunctions. Eigenvalues represent values of the parameter (or observable) for which a solution exists, and define the permissible physical states in which a system may find itself. Mathematically, the eigenvalue equation, which also involves derivatives, is:

$$0 = \hat{\mathcal{D}} \psi - \mathcal{E}_D \psi$$

where \mathcal{E}_D (the eigenvalue) represents the possible values of the observable (the parameter) $\hat{\mathcal{D}}$, and ψ (the eigenfunction) generates information about the state of the system. The *caret* indicates that a variable (parameter) in classical physics has been replaced by its operator dictated by the principle of operator coorespondance. This last principle states that for each relationship among physical variables in classical mechanics when *no derivatives* are involved, there is a corresponding relationship in quantum mechanics where the *variables* are replaced by

appropriate *operators*. Two examples of the qualitative aspects of the quantum eigenvalue problem are: when observable of interest is the **position** x of a particle, then

$$0 = \hat{x} \psi - \mathcal{E}_x \psi$$

and when observable of interest is **momentum** p of a particle, then:

$$0 = \hat{p} \psi - \mathcal{E}_p \psi$$

and energy eigenvalue equation is:

$$0 = \hat{E} \psi - \mathcal{E}_E \psi$$

and in a conservative, holonomic system free of time-dependent constraints that energy is given by its Hamiltonian, H :

$$0 = \hat{H}(\hat{q}, \hat{p}, \hat{t}) \psi - \mathcal{E}_E \psi$$

7.3.2 Proposed Fourth Level Physics

The first extension of the scope of physics is suggested here to deal with the higher class of problems. That is:

$$e_4 : 0 \overset{group}{\Longleftarrow} A(s-t) ; Bv ; Ca ; Dj$$

in which j is third order relation between space and time—**Jerk**. Jerk is normally defined as a vector that specifies the time rate of change of acceleration—the third

derivative of space with respect to time. Every automobile driver has direct experience with the third derivative, by pushing the accelerator, applying the brake, or changing its direction he is changing its acceleration. This physics, for example, is directly applicable to *shock* mechanics in its new formulation. This level of physics could be also associated with the *jiggling* motions.

7.3.3 Proposed Fifth Level Physics

The second extension to the scope of physics is suggested for other special class of problems. That is:

$$e_5 : \quad 0 \stackrel{\text{group}}{\longleftarrow} A(s - t) ; Bv ; Ca ; Dj ; Ek$$

in which k is forth order relation between space and time—**Kick**. It is a vector that specifies the fourth derivative of space with respect to time. This physics, for example is applicable to *impact* mechanics in its new formulation. This level of physics could be associated with *Brownian* motion.

Robert Brown noticed early in the nineteenth century a motion in pollen grains suspended in water, similar to motion of tiny particles of dust dancing in a beam of sunlight. Brownian motion is a “high degree” of order, which as seen by our senses is random and discontinuous. As the degrees of order become high, we reach a description, which is called ‘random’. Random should not be called ‘disorder’; rather, it has an order of a high degree. In that motion, it seems to us that the particles

being kicked around by atoms and molecules attain “instantaneous speed”, which implies velocity exceeding the speed of light. To overcome this paradox and account for these phenomena, the higher terms such as **Jerk** and **Kick** should be included in describing the motion.

The development of higher order physics is necessary in order to achieve better insight of the physical problems with higher intensity of interactions between the man-made defined entities, and to eliminate the artificial so-called “hidden variables.” In higher order physics, the so-called *hidden variables* are illusions, as maintained by **Bohr**. They were introduced by **Einstein** to describe the *Brownian* motion and are resumed in quantum mechanics. At a certain level of the apparent world, the Brownian motion appears to be totally random and probabilistic, yet as soon as one moves to a deeper level—the molecular level—the motion turns out to be totally deterministic. Could the random process of quantum theory result from a larger number of deterministic subquantum events? Yes, similar to random vibration as a mixture of deterministic vibrations with known frequencies. At the level of **holoevent** with all terms included in the consideration, there would be no Einstein hidden variables nor subquantum hidden variables. All movements are to be described from the very outset as more general than Brownian motion so that the apparent continuous motions would be the approximations to actually general type of movements. In Eventics, we go beyond the role of signal of relativity theory and quantum state of quantum theory, and **we are in a position similar to where Galileo stood when he began his inquiries.**

Of course, for new and future physical problems with

highly entangled phenomena in reference to our framework, the holographic view of holoevent is required to provide the accurate formulation. In general, for the high level problems the full course of **Eventics** *should be followed where holoevent para-holographically includes physical and non-physical entities.*

Working with higher order physics seems very complex by using the ordinary mathematical tools. The computer aided symbolic algorithm (such as Symbolic Manipulation Program) is best suited to remove the complexity and to make the development of higher order physics possible. This tool is also very useful in development of full scale **Eventics**.

7.3.4 Mathematical Derivations

Mathematically, the equations of physics are invented by the operation of integration on differentiation, which can be only true when we admit to the method of *analysis* (non-holistic).

Here several mathematical derivations of e_n are given where only the arithmetical operations are involved.

There are several ways to approximate a function by a more convenient representation. As per Weierstrass' theorem, any function $f(x)$, which is *continuous* in an interval, can be approximated uniformly by power series:

$$f(x) \approx P_n(x) = a_0 + a_1x^1 + a_2x^2 + \cdots + a_nx^n$$

And as per Lagrange, if $f(x)$ has n derivatives, then it can be approximated by celebrated Taylor series developed by **Brook Taylor** in 1715 and can be proved by **integration by part**:

$$f(x) = f(a) + \frac{x}{1!}f'(a) + \frac{x^2}{2!}f''(a) + \frac{x^3}{3!}f'''(a) + \text{etc. à l'infini.}$$

These approximations correspond to what Fourier writes: “ The natural phenomenon whose laws we are searching for is actually divided into distinct components, which correspond to the various terms of the series.”

Hoëne (Jozef Maria) **Wronski** (1776-1853) in his *Œuvres Mathématiques* (1811), which is a mixture of the theory of infinite series, difference and differential equations, and complex variables, derived what he called “la loi universelle de la génération des quantités, et la Loi SUPRÊME des Mathématiques” which, in English, is “the Grand Law of the Generation of Quantities,” as the Key to the Universe. He started out with Taylor series and generalized it as follows:

$$F(x+i) = F(x) + \frac{i}{1!} \cdot \frac{dF(x)}{dx} + \frac{i^2}{2!} \cdot \frac{d^2F(x)}{dx^2} + \frac{i^3}{3!} \cdot \frac{d^3F(x)}{dx^3} + \text{etc. à l'infini.}$$

where i is a real variable; or for $x = 0$, designated as x^0 :

$$F(i) = F(x^0) + \frac{i}{1!} \cdot \frac{dF(x^0)}{dx} + \frac{i^2}{2!} \cdot \frac{d^2F(x^0)}{dx^2} + \frac{i^3}{3!} \cdot \frac{d^3F(x^0)}{dx^3} + \text{etc. à l'infini.}$$

and changing i to x :

$$F(x) = F(x^0) + \frac{x}{1!} \cdot \frac{dF(x^0)}{dx} + \frac{x^2}{2!} \cdot \frac{d^2F(x^0)}{dx^2} + \frac{x^3}{3!} \cdot \frac{d^3F(x^0)}{dx^3} + \text{etc. à l'infini.}$$

and assuming $x = \psi y, y = \phi x$, then:

$$\begin{aligned}\frac{dF(\psi y)}{dy} &= \frac{dF(x)}{d\phi x} = \Xi_1, & \frac{d^2 F(\psi y)}{dy^2} &= \frac{d\Xi_1}{d\phi x} = \Xi_2, \\ \frac{d^3 F(\psi y)}{dy^3} &= \frac{d\Xi_2}{d\phi x} = \Xi_3 & \dots &\dots\end{aligned}$$

and then:

$$\begin{aligned}F(\psi y) &= F(\psi y^0) + \frac{y}{1!} \cdot \frac{dF(\psi y^0)}{dy} + \frac{y^2}{2!} \cdot \frac{d^2 F(\psi y^0)}{dy^2} \\ &\quad + \frac{y^3}{3!} \cdot \frac{d^3 F(\psi y^0)}{dy^3} + \text{etc. } \grave{a} \text{ l'infini.}\end{aligned}$$

or finally by the Paoli series for $y = \phi x = 0$:

$$\begin{aligned}F(x) &= F(x^0) + \frac{\phi x}{1!} \cdot \Xi_1^0 + \frac{(\phi x)^2}{2!} \cdot \Xi_2^0 + \frac{(\phi x)^3}{3!} \cdot \Xi_3^0 \\ &\quad + \text{etc. } \grave{a} \text{ l'infini.}\end{aligned}$$

and finally he expressed it by:

$$F(x) = A_0\Omega_0 + A_1\Omega_1 + A_2\Omega_2 + A_3\Omega_3 + \text{etc. } \grave{a} \text{ l'infini.}$$

as the Grand Law, a general scheme for expressing a function as linear summations of other functions—in here called **Wronskian** function.

This expression can be used either: to state that Wronskian function $F(x)$ represents a special case of the bundle of event with arithmetical operations, or rewriting it as:

$$0 = F + B_0\Omega_0 + B_1\Omega_1 + B_2\Omega_2 + B_3\Omega_3 + \text{etc. } \grave{a} \text{ l'infini.}$$

to resemble e_∞ , in which only arithmetical operations are preserved.

Another mathematical derivation of this special case is achieved by direct application of the **integration by part** of a function $f(\tau) = f(\mathbf{x})$, in which τ and \mathbf{x} represent time and space respectively.

The author of this book has carried out this derivation, but the tedious derivation will not be given here, and the result is summarized as:

$$\begin{aligned} 0 = & f(\mathbf{x}) + \dot{\mathbf{x}} \mathbf{L}_1(\mathbf{x}) + [\textit{nonlinear of } \dot{\mathbf{x}}] \\ & + \ddot{\mathbf{x}} \mathbf{L}_2(\dot{\mathbf{x}}, \mathbf{x}) + [\textit{nonlinear of } \ddot{\mathbf{x}}] \\ & + \ddot{\mathbf{x}} \mathbf{L}_3(\ddot{\mathbf{x}}, \dot{\mathbf{x}}, \mathbf{x}) + [\textit{nonlinear of } \ddot{\mathbf{x}}] \\ & + \cdots + \mathbf{x}^{(n)} \mathbf{L}_n + [\textit{nonlinear of } \mathbf{x}^{(n)}] + \cdots \end{aligned}$$

in which $\cdot = \frac{d}{d\tau}$ and \mathbf{x} is function of time τ .

Physics conveniently subdivides these terms into two categories and defines the first two terms by “active force”, and the rest, ignoring the nonlinear terms by “*hyperinertia force*”. That is:

$$0 = \underbrace{F_a}_{\text{active force}} + \underbrace{F_{hi}}_{\text{hyperinertia force}}$$

Historically, C. Neumann, W. Voigt, L. Koenigsberger introduced the *hyperinertia force*, (then called simply “force”), with higher than the second derivatives, and in particular the Koenigsberger book, “*Die Principien der Mechanik*” (Leipzig 1901) is full of “*hyperinertia force*” and *hyperkinetic energy*” with higher derivatives. Here, the term “inertia force” is preserved for definition of inertia force involving only the second derivatives with only *one* corresponding defined “mass”.

From the above expression, it can be seen that as there is no manifestation of inertia in the case of an object in free fall in a static field:

$$0 = F_a + \cancel{F_i}$$

there is also no manifestation of “anything” for an object in zero (0) bundle of event \mathbf{E}_b at the holoevent.

$$0 = \mathbf{E}_b = \not{H}_a + \not{H}_{hi}$$

The *integration by part* can be implemented up to a certain level of interest by having a remainder term. For example, when the integration is carried only two steps, or using above expression with two derivatives:

$$0 = f(\mathbf{x}) + \dot{\mathbf{x}} \mathbf{A}(\mathbf{x}) + \ddot{\mathbf{x}} \mathbf{B}(\dot{\mathbf{x}}, \mathbf{x}) + \mathbf{R}$$

This mathematical expression complies with the *principle of nothingness* regarding the physical events, in which the time variable τ is implicit. It is the mathematical foundation of Galilean (classical) physics, in which usually the term \mathbf{R} is dropped out, and $\ddot{x} B(\dot{x}, x)$ is defined as *inertia force* designated by $-\mathbf{M}(\dot{\mathbf{x}}, \mathbf{x}, \tau) \ddot{\mathbf{x}} = F_i$. The combined first two terms plays the main role in the Galilean physics including Newtonian mechanics, relativity and quantum mechanics. Various definitions are given to this combined term: force or field of force or simply field, and various theories developed in physics regarding this portion of the *principle of nothingness*. For example, the Newtonian mechanics defines the negative of the first two terms by *active force* as a position, velocity and time dependent entity, namely: $-\{f(\mathbf{x}) + \dot{\mathbf{x}} \mathbf{A}(\mathbf{x})\} = F_a(\dot{\mathbf{x}}, \mathbf{x}, \tau)$. Then:

$$\begin{array}{ll} F_a(\dot{\mathbf{x}}, \mathbf{x}, \tau) & = \quad M(\dot{\mathbf{x}}, \mathbf{x}, \tau) \ddot{\mathbf{x}} \\ \text{active force} & \quad - \text{inertia force} \end{array}$$

This mathematical derivation in special case, complying with *the principle of nothingness* provides the main expression of classical physics that is commonly referred to as the “second law of mechanics”. In usual Newtonian mechanics $M(\dot{\mathbf{x}}, \mathbf{x}, \tau)$ assumed to be constant and is defined as a constant (inertial) mass m . (See Appendix A for new physical interpretation of Newtonian mechanics, and in particular the consequence of the definitions of *inertial mass* and *inertia force*).

There are many ways to carry out the integration by part and interpret the resulting expression, each of which provides an interesting insight and application. For example the above expression can also be obtained by one-step *integration by part* if we start out with a function $f(\tau) = f(\dot{\mathbf{x}}, \mathbf{x})$.

7.4 Psychological Events

A CASE OF WORLD FROM WITHIN

The events occurring in the world from within encompass the unified reality from “pre-” states through “trans-” states realities (events). The whole-psychology deals with pre-states realm and trans-states realm as one whole reality, which contains the common descriptions of pre- and trans- states. It is a unified world paradigm that includes philosophy-psychology, transcendental religion-mysticism. It deals with the knowledge of philosophy, logic, mind, and knowledge of transcendent realities.

This is referred to as the ultimate-psychology, which is a psychology of fundamental wholeness of the world from within. The psychological development and tran-

scendence are two different words for the very same process. The form of growth is the form of transcendence and development, from subconsciousness through self-consciousness to superconsciousness, remembering more and more, transcending more and more, integrating more and more, unifying more and more, until we reach the **Unity**, which was always there from the start.

In psychology, three general realms are recognized—subconscious, self-conscious, and superconscious; or pre-rational, rational, and trans-rational; or pre-personal, personal, and trans-personal. There are some similarities between pre- and trans- states leading to pre/trans fallacy committed: by **Freud** by reducing the trans-rational to the pre-rational; or by **Jung** by elevating the pre-rational to the trans-rational. Although there is merit to these similarities relevant the source of all of our apparent and non-apparent worlds, i.e., the omniwholeworld. But, still these states should be considered as two different realms within our apparent worlds. Nevertheless, the inspiring knowledge from one state to the other is useful for the concept development.

The highest reality (holoevent) is the eternally unthinkable. Thought creates things by slicing up reality (event) into small bits (series of events) that it can easily grasp. Thus, when we are *thinking* we are *thing-ing*. Thought does not report things, it distorts and slices reality (event) to create things. In doing so, very essence of reality escapes.

Wilber well described the various stages of the human development in his *Atman project book*. The first stage of consciousness is pre-temporal: no past, no present and no future, in which the infant is totally ignorant of

time because it is not introduced to him. The last stage of consciousness is trans-temporal. The infant fusion state is pre-subject/object differentiation, pretemporal, pre-spatial, preverbal and prepersonal. The mystic and psychological union is trans-subject/object, transtemporal, transspatial, transverbal and transpersonal. The infant cannot distinguish, while the mystic, being aware of the conventional duality, transcends. The overall life cycle consists of all stages of consciousness:

From subconsciousness to self-consciousness—
the outward movement or the path of pursuit
characterized by self-assertion.

From self-consciousness to super-consciousness—
the inward movement or the path of return
characterized by self-realization.

We call outward *objective* and inward *subjective*. It begins with the moment of birth when the infant does not possess a developed self sense. For the newborn child, there is no real separation between inside and outside, subject and object, body and environment. From the infant's view there are **events**, but no objects and not as objective events separate from himself. His awareness is only events, it is spaceless, timeless, objectless. The self is "pleromatic" meaning that the objective world and the infant's subjective awareness are completely undifferentiated, and in a sense, his self and his physical environment are one and the same. This stage is one of absolute non-dualism, which is pre-spatial and pre-temporal. There is no real space, no gap, no distance, and no time.

It ends with ultimate unity consciousness, the ultimate reality (the Atman). The superconsciousness described by **Wilber**, the beyond-mind realms, in which time collapses into the Eternal Now and continues to flow through it and from it, with state of timelessness through formlessness, presents the mystical and psychological aspects of the holoevent and the omnievent. Nature happens simultaneously—everywhere at once, no before, no after. It has the whole of its existence simultaneously. This is the nature of Eternity.

The notion of succession, the idea of time, is the process of memory. Memory creates an illusion of time. This present moment contains all time and is itself timeless, and timeless present is Eternity itself—a moment without date and duration, extension or succession, past or future, before or after.

According to Eastern mysticism, God's creativity is an event of timelessness, of nothingness, of absolute void (resembling the holoevent of Eventics)—empty void with everything. When we create "time", the creation presents itself as a series of events. The now-moment in which the first man was created and the now-moment in which the last man will disappear, and the now-moment in which I am speaking are all one in the holoevent and the omnievent (the mystic God) in which there is only one Now. As Christ claimed: "Before Abraham was, I am".

The apparent (illusory) creation or evolution of our conventional levels of consciousness is from, or out of, the level of mind, as illusory evolution of mind into time. In the domain of apparent worlds, Wilber suggested 'the perennial psychology', for universal and unanimous insight into the very nature and essence of consciousness.

It is not pre-vision or fore-sight; rather, it is an “on-sight” (today we call it insight). Following the perennial psychology, we view the individual **self** as an illusion and its world as a dream. Eastern wisdom awakens the *self* from this dream; western disciplines prevent it from becoming a nightmare.

Scientific knowledge of *self* is not real knowledge. *Self* knowledge is possible only when scientific studies (or human studies for that matter) come to an end. William James defined a man’s *self* as the sum total of all that he *can* call his, not only his body and his psychic powers, but his clothes and his house, his wife and children, his reputation and works, his lands and horses, and yacht and bank-account. Biologists claim that a man’s *self* (his real being) is the entire organism-environment field. *My-self* is a conglomerate of various sensations, and since all sensations are something I have, then I am forced to say that “I” have a *self*. But who is the “I” that has a *self*? Another *self*—a second *self*? And who has this sensation of a second *self*? A third *self*? And so on. (See serialism by Dunne). Apparent subjectivity of the *self* exists only on the plane of relativity and vanishes in the absolute.

Schrödinger said: in truth, there is only one reality; he called it Mind (cap M), which is comparable with the holoevent in Eventics. The multiplicity of individual minds (series of events) is apparent. What seems to be a plurality is merely a series of different aspects of this one reality (holoevent), produced by deception.

Eventics metaphorically points to reality as that single and absolute ground of all phenomena. Reality is actually neither one nor many, singular nor plural, transcendental nor immanent. It is that nameless nothing-

ness, which to our world appears “nothing”, but to real world is “all things” — it is the holoevent. Any proposition that claims to embrace reality must contradict itself. For example, suppose we state that reality is absolute being, that it is infinite and unlimited. Absolute and unlimited being, however, positively excludes relativity and non-being, and exclusion is a mark of limitation. Thus the “unlimited being” is limited, and it is contradiction. Any statement makes sense only in terms of its opposite. Any idea that one can possibly conceive has meaning only in relation to its opposite—up makes no sense without down, left makes no sense without right, being makes no sense without non-being, boundless without bounded, truth without falsity, good without evil, dark without light. But reality (holoevent) as a whole has no opposite and thus it can never be thought about. Holoevent (holoreality) is beyond all forms of dualism, in it there are no contrasts—it is the coincidence of opposites and non-dual. When it is viewed in the physical realm, it curves back in on itself like a Mobius strip, and thus has no outside and no inside, or its inside is its outside. Our common logic operates on the basis of pure dualism, and it therefore cannot see that an inside is an outside, an up is a down, a good is an evil and so on.

In Eastern philosophy, each and every thing simultaneously includes all things in perfect completion, without the slightest deficiency or omission. To see one object is to see all objects. That is, a tiny individual particle within the minute cosmos of an atom actually contains the infinite objects and principles in the infinite universes of the future and of the remote part in the perfect completeness without omission. It is the highest attempt to

put into words the non-dual reality that itself remains wordless, unspeakable, and put into words the nameless **nothingness**.

Modern western philosophy, as in modern system theory and Gestalt psychology, in some extent, express similar view. However, they refer to wholeness, holistic, organismic, gestalt, with the concept of the systems of separated elements in mutual interactions. Eventics describes the real world with inseparable entities. These entities are separated when comes within the scope of our apparent worlds. Subject and object, observer and observed, good and evil, and in fact, all opposites are *different* but not separable. As Whitehead said: each happening (event) is a factor in the nature of every other happening (event), we are in the world and the world is in us.

The harmonious cooperation of all beings arose, not from the order of a superior authority external to themselves (God), but from the fact that they were all parts of wholes forming a cosmic pattern, and what they obeyed were the internal dictations of their own natures—the nature of the holoevent.

Our ordinary conception of the world as a complex of things extended in space and succeeding one another in time is only a conventional map of the universe—it is not real. Universe splits itself into observer vs. observed and becomes distinct from itself. Our conventional, dualistic, symbolic pictures are subtle falsifications of the very reality (holoevent) they seek to explain. Man can no more separate himself from universe and extract “knowledge” from it than a hand can grab itself or an eye can see itself. If I have a fly in my eye, how can I see that I have a fly in

my eye? Mind cannot see (think) itself, sword cannot cut itself and finger cannot touch its own tip. Man stands in his shadow and wonders why it is dark. Thus, man lost in his own shadow, is unable to conceive what the real world is in its actuality.

The conceptualization and objectification refers to the same process, because at the moment we form concepts about universe, we make that universe objective.

It should be realized that none of our notions apply to holoevent and omnievent. For example, if the “before” and “after” are both in one and the same Now, then what happened ten thousand years ago would be simultaneous with what is happening today. This requires, in accordance with our apparent worlds concepts, to have “absolute rigid medium” and “infinite speed”, which are irrelevant to real world of holoevent.

In Eventics, **mind** is intemporal, timeless, eternal—a now-moment viewpoint of consciousness, which is a psychological interpretation of the philosophia perennis. Consciousness is sometimes treated as spectrum to tell what it is like, similar to the spectrum of energy waves of various wavelengths, frequencies, and energies describing all radiations such as x-rays, visible light, radio waves, infrared, ultraviolet and etc., as different bands of one spectrum. Consciousness can be treated as a spectrum of penetrating forms of energy, from the finest all-radiating luminous consciousness down to the densest form of materialized consciousness, which appears before us as our visible, physical body, as it approaches to the physical reality (event). Following **Wilber**, various levels in spectrum of consciousness can be described by three major levels:

The **Ego** level is that band of consciousness that comprises our role, our picture of our self, our self-image with both its conscious and unconscious aspects, as well as the analytical and discriminatory nature of the intellect, of our “mind”.

The **Existential** level involves our total basic sense of existence, of being, along with our cultural premises. It forms the persistent and irreducible source of a separate I-awareness.

The **Mind** level is commonly termed mystical consciousness and entails the sensation that we are fundamentally one with the universe. It includes the mind and the body and the rest of the universe as the psychological event category of the holoevent in Eventics.

The Ego level includes the mind; the Existential level includes both the mind and the body; the Mind level includes the mind and body as well as the rest of the universe.

In concerning the pre- state of consciousness Piaget's studies are very valuable. **Piaget**, concerning the pre-personal state of development, believed that the features of child thought constitute a coherent whole, such that each of its terms partially implies a portion of the other terms. Child thought cannot be isolated from the factors of education, and all the various influences, which the adult exercises upon the child. But these influences do not imprint themselves upon the child, they are deformed by the living being who comes under their sway, and they are incorporated into his own psychological substance. System theory considers a series of structures and search for ways of understanding their interconnections. Psychology considers structures as things. Piaget as in

Eventics, states that structures are not things or beliefs, but they are coherent sets of mental operations, which can be applied to things or beliefs. The belief in the conservation of matter is not a "structure". Rather, the set of operations, by which this belief is arrived at, is a structure. Piaget believes children develop a set of operations that permits them to discover, for example, the conservation of matter. Child notion of conservation of matter is logical operation by means of which the subject maintains magnitudes and relations despite preconceptual transformations.

Piaget had tried to show the childhood origins of human knowledge in: logic, language, morality, mathematics, space, time, chance and play. He has dealt with a wide spectrum of psychological processes: reasoning, perception, imagery, memory, imitation and action. He was concerned with genetic epistemology and with exploring its biological and psychological implications. Piaget is best referred to as an interactionist, somewhat as a nativist and in a sense, empiricist.

Piaget genetic epistemology consists of interactionism, constructivism, and logical determinism. As he said: child at early age does not discover reality, he constructs the reality.

Egocentrism helps to make the child unconscious of himself as far as to prevent him from being aware of the phenomenon of thought as a subjective phenomenon, and from establishing the exact limit between his own ego and the external world. We admit that child is ignorant of the distinction (separation) between the physical and the psychological qualities. Consequently this ignorance leads him to regard the external world as en-

dowed with both physical and psychological qualities at the same time, which is the tendency to “precausality”—the tendency to take a psychological motive as the true cause of everything.

Piaget believed that child realism is intellectual and not visual, full of considerations that are foreign to pure observation: justification of all phenomena, synergetic tendency to connect everything to everything else—confusion of physical causality with psychological or logical motivations. The child only sees what he knows and sees external world as though he had previously constructed it with his own mind. Child is not interested in spatial contacts nor in mechanical causation. The features of child thought really constitute a coherent whole, such that each of its terms partially implies a portion of the other terms.

Piaget discussed the pre-personal level at six early stages of child development as follows: At first stage (birth to 6 weeks), objects dissolves into **nothingness**, no conceptual space and time and no causality—a pre-knowledge of the **holoevent**. At the second stage (6 weeks to 5 months), there are no permanent things and spaces still kept separated but there is a beginning of coordination among them, there is also an early concept of time based on periodical repetitions. At this stage, the entire sequence of individual movements and acts (series of events) being fused into one undifferentiated lump—similar to the *holoevent*. Child at third stage (5 months to 9 months) begins to coordinate between vision and prehension; and make general coordination of the different spaces and all the separate spaces are unified into a general container (S_0). At forth stage (9 months to 12

months), the stage of coordination between means and goals, child begins to develop the concept of time by ordering of instants into “before” and “after” as crude as “before” and “behind” in space. At fifth stage (12 months to 18 months), the stage of discovery of new means, child takes into consideration the total organization of displacements when they are all simultaneously visible. Objects begin to be considered as independent, and the group of displacements is being structured. Objects become permanent and perceived in itself with some spatial and physical connections independent of child action on them. At sixth stage (18 months to 24 months), the stage of insight, child is capable of structuring space in a coherent way. To him, object is permanent in its objective location in the world where subject is simply another object.

According to Piaget, the child develops at an early age all aspects of the symbolic function including language or more accurately, the semantic function: the ways in which the individual represents his world, his actions, and his experiences to himself. The infant is capable only of actions in the *here* and *now* of his actual experience (here-now-universe), with little anticipation of the future or recourse to the past. This pre-personal concept of reality corresponds to spaceless, timeless concepts of trans-personal concept of reality. Piaget believed in a view based on a system of operations similar to Boolean algebra, which is an algebraic system based on mathematical relationships borrowed from Boole’s symbolic *logic*. Boole in his masterpiece, *An Investigation of the Law of Thought* (1854), set forth the fundamental laws of those operations of the *mind* by which *reasoning* is per-

formed, and established the science of *logic* by expressing these laws in the symbolic language of calculus.

Movement appears to the child not as a distance traveled, but a change of position or location. A pencil was “on the table” a moment ago, it is now “on the ground”—the location “on the table” is replaced by the location “on the ground”. At early age, child confuses the temporal and spatial successions and has the lack of differentiation between space and time. Time is the coordination of motions at different velocities—motion of external *objects* in the case of *physical* time, and motion of the *subject* in the case of *psychological* time. Before the operational concept of time (i.e., ratio of distance to velocity) is grasped, the temporal order is confused with the spatial order and duration with the path traveled. But velocity itself is derived from space and time, meaning a circular process.

A single displacement and a chain of displacements is a movement having no speed. When the successive positions of one moving object are ordered in relation to those of another object the concept of speed intervenes—speed is “overtaking”. Young children conceive of speed itself in terms of the intuition of overtaking.

The child constructs the basic operation of movement and speed as follows: in first stage, the child establishes the operation of placing objects (*placements*) or successive ordering in space. In the second stage, he establishes the operation of displacements (*movements*), which are the changes of position of the objects themselves. Then he coordinates placements with displacements into one composed system of operations (*co-displacements*), generating the notions of temporal succession, duration, and speed relative to a reference frame. He then establishes

the proportions between spaces covered and times necessary to cover those spaces, and formation of *extensive* operations. Finally, the *metric* system of operation on space and time will appear, permitting, through the construction of an iterative unity, the measurement of distances and duration and hence the measurement of the path traveled at the speed used.

It is of great value to know the psychological and logical build-up of the concepts of movement and speed. The general passage, from intuitive thinking toward operational thinking, forms the basis of reasoning that is studied by Piaget in examining the development of concepts of movement and speed.

The operations starts with a system of qualitative groupments and then results in extensive and metrical quantitative groups. This development of the conceptions of movement and speed is correlated with the development of conception of time. There are several distinguished operational systems in this process:

1. Operations of "placement", the idea of order of succession in space.
2. Operations of "displacement", or change of position.
3. Operations of "co-displacement", i.e., correspondance between placements or displacements, the idea of order of succession in time, duration, and speed.
4. Operations of "relative displacements and co-displacements", permitting composition of correlative movements and their speeds.

5. Extensive operation, i.e., mathematical, which permit construction of relations of ratios, and proportionality between space and time.
6. Metrical operations, permitting measurement, through the construction of repeatable units of distances and durations, of the paths traveled and the speed.

It is interesting to note that Piaget, concerning pre-personal level, is consistent with Eventics, that children at first fuse the notions of space and time together. After this early period of lack of differentiation, the children become capable of seriating a sequence of events, and begin to understand the succession of events and they dissociate space from time, and space from speed and motion. After physical time has become measurable in a metric system, then the dissociation between a time of personal activity and a physical time comes. Children dissociate a time of personal activity and a physical time, and construct an "*objective time*" independent of "*inner time*" or the time of subjective experience that depends on feelings, effort, concentration, and other factors. Bergson's entire philosophy and lot of his psychological works influenced by that have stressed the importance of inner duration and psychological time.

The psychological events are acausal without presupposing the existence of physical space and time. The term *synchronicity* is used for the simultaneous occurrence of two meaningfully but not causality connected events, i.e., the simultaneous occurrence of a certain psychic state with one or more eternal events, which appear as meaningful parallel to the momentary subjective

state. It is in a special sense a coincidence in time of two or more causally unrelated events, which have the same or similar meaning, in contrast to *synchronism*, which means the causally simultaneous occurrence of two events. Synchronicity is a highly abstract and “irrepresentable”, which ascribes to the moving body a certain psychoid property, which forms a criterion of its behavior. It is the fact of causeless order, or rather, of meaningful orderness that may throw light on psychological parallelism. Avicenna knew about the occurrence of synchronistic events as he said: a certain power to alter things indwells in human soul and subordinates the other things to her, particularly when she is swept into a great excess of love or hate or the like, i.e., when the soul of a man falls into a great excess of any passion, the excess binds thing and alters them in the way the soul wants.

7.5 Social Events

A CASE OF INTERACTIVE WORLD

To study, comprehend and develop theory in regard to the events concerning the *interactive world* is the most complex problem facing men of all generations. The reason is that man in practical world, on an approximate basis, acquires knowledge about the world from *within* and the world from *without*, as not independent from himself, his apparent worlds and the universal being, and hence, the interactive world as the interaction of the world from within and the world from without is already influenced by man.

The characteristics and value of social event (reality)

is genuine to itself, not derived from the other events, As a result, it is uneasy for man to deal with this reality beyond the subjective and the objective realms. This is the reason why the social affairs received very little progress and are far behind of scientific progress or religious expansion. Unfortunately, this progress and expansion created heroes in society and in particular, within philosophers who tried to develop social theories based on these realms. Our social relationships are so primitive that can be noticed by numerous crises as social events in our universe. That is also why the prediction of social events even by the planners is the matter of guess and surprise. As a result, the interpretations of social and historical events are subjective, and the subject is incomprehensible by those who have not grown up with these events.

Sorokin in his social and cultural dynamics (1941) defines three basic social value systems:

The sensate: holds that matter alone is the ultimate reality, and that spiritual phenomena are but a manifestation of matter. All ethical values are relative and that sensory perception is the only source of knowledge.

The ideational: holds that true reality lies beyond the material world, in the spiritual realm, and that knowledge can be obtained through inner experience. It subscribes to absolute ethical values and superhuman standards of justice, truth, and beauty — as in Platonic ideas, the soul, Judeo-Christian images of God, etc.

The idealistic: holds that true reality has both sensory and supersensory aspects, which coexist within an all-embracing unity. Produces balance, integration, and aesthetic fulfillment in art, philosophy, science and tech-

nology. Example of this are the Greek flowering of the fifth and fourth centuries B.C., and the European Renaissance.

While the cultural mainstream committed itself to fixed ideas and rigid patterns of behavior, the creative minorities appeared on the scene and carried on the process of challenge-and-response. Before 1500 the dominant world view was organic, interdependence of spiritual and material phenomena and subordination of individual needs to those of the community.

As an example, **Locke** used the analogy and introduced an atomistic view of society, reducing the patterns observed in society to the behaviors of its individuals. His study of human nature based on **Hobbes**, who declared that all knowledge was based on sensory perception. He was guided by the belief that there were laws of nature governing human society similar to those governing the physical universe.

Another example is the Marxist view of history known as dialectic or historical materialism, in which the roots of social evolution lie in economic and technological development, not in a change of ideas or values. Marx took the dynamics of change to be that of a dialectic interplay of opposites arising from contradictions. Marx took this idea from the philosophy of Hegel and adapted it to his analysis of social change. He held that all the important historical evolutions or progresses were born in conflict, struggle, and violent revolution. Human suffering and sacrifice was a necessary price that has to be paid for social change. This is parallel to Darwin's emphasis on struggle in biological evolution. However, this is only one element of the social reality. The ultimate essence of real-

ity, which is called *Tao* by Chinese, is continuous cyclical fluctuation as a process of continual flow and change. As Plato was the first to discover the mode of philosophical inquiry, Marx was the first to discover the mode of *social critique*. Marx fell into the trap of expressing his idea in scientific mathematical formula that undermined his larger sociopolitical theory. All these models and social economic theories—Marxist and non-Marxist are Cartesian paradigm.

Realizing the complexity of this reality, man made no attempt to deal with it on its own ground, and dealt with it based only on analogy to other realms and on his prejudice. We witness enormous advancement in science and technology since the Greeks, but very little progress in the conduct of social affairs. This has been realized by the men of all generations who tried excitedly to carry over the findings of other fields into this realm. This approach has brought us a great deal of uncertainty, and lead us to where we are today with the entire current social crises that we are unable to comprehend.

We should stop the trend of development of social reality based on scientific knowledge similar to Hegel and Marx, or based on Eastern and Western religious concepts and dictations, or mystical paradigm. We should not propose the theories regarding social events, of either historical past, or conducting at present or guiding future, by deriving from or applying of other branches of inquiries, and should not entail this reality to other branches of inquiries such as science, psychology, mysticism, religion, etc. This is what was most often adopted by our guiding philosophers of the past, who were committed, to the danger of false theories of other fields.

When the theory of these branches fails to suite our need, we eventually realize the failure of our social theory as well, but usually long after the damage has been done.

This subject is one of the most important branches of inquiry, in which no major advancement is achieved since the Greeks. We should appreciate the complexity of this reality, which requires understanding in a holistic fashion, irrespective of its ingredients, namely, the elements of the world from without, the world form within and the other elements of interactive world, that are introduced for our convenience. That is, man of all cultures should admit his ignorance in this field and be brave to initiate the task of research in social events in isolation as the approximate approach within apparent worlds, as well as the Eventical approach to social events. Obviously, the far-reaching goal is the Eventical approach to all different series of events, with eventual grasp of the *holoevent*.

7.6 Eventical Reality (Event)

Holistic system of the world from *without*, the world from *within* and the *interactive* world. The treatment of this reality is the ultimate goal of Eventics. The present book as a **Menu** is only an introductory exposition of Eventics, in which the fundamental concepts and principle are presented. It opened a new door for acquiring knowledge about various events from physical to historical occurring around us. The main goal of Eventics is, by following this introductory Menu, to deal with Eventical event in its full context, and develop whatever means needed to facilitate this process. This is a never ending quest, which requires extensive research and development.

It is my intention to explore this matter in detail in future, and hope that the forthcoming exposition and future researches on this topic enable us to take a decisive step in participating intelligently in the unfolding process of our world events, and see ourselves as better humans than we are ranked.

Appendix A

Commentary

Laws of Mechanics New interpretations of classical physics

Man, in dealing with the series of events, developed, for his convenience, an approximate concept of inseparable *space* and *time*, as an entity constituent of **events**. Later, by a further approximation process he broke this mixture up into two entities by introducing two distinct concepts of *space* and *time*. To express these concepts he adopted the unconditional assertion of $X = X$. This development constitutes the foundation of science of physics we have to date. Application of this assertion to any other statement and concept can lead to other series of new sciences.

The original mixture entity of space and time was very obscure, similar to the pre-personal concept of space and time at early stages of child development. Then, man in searching for simplicity developed the concept of separation of space and time in order to interpret the events within the scope of his understanding whereby he

can benefit from that for his advancement. However, the separate concepts of space and time gave him very narrow picture of his apparent world, and provided him only with the limited knowledge about the events. As a result, he tried to improve his position by introducing a new entity—a special mixture of space and time, called *velocity*. By means of these three concepts he hoped to achieve better insight about events. Eventually, the modern physics weave these three concepts together and established the unified concept of *space-time* that contains only a special mixture of space and time, namely, the speed of light. And finally, on the same ground, physics generalized this idea by introducing the concept of *metric*, which serves a general unification of space and time.

Moreover, man developed the concept of velocity in a simplest form of division of space by time. This is based on the idea of relating the terms by *reason* or *ratio*, (see Appendix B). He could have generated other concepts such as multiplication, addition, subtraction, or any other simple or complex relation of space and time:

$$V = (Space)/(Time) \quad , \quad V_1 = (Space) \times (Time)$$

$$V_2 = (Space) + (Time) \quad , \quad V_3 = (space) - (Time)$$

$$V_n = f(Space, Time)$$

Actually, only a general mixture entity $(st) = g(s, t)$ where s is a generalized **Wheeler's** superspace could provide a better representation of the original space and time

mixture. Expanding this mixture in series and work with a few terms of the series leads to the separate entities of space, time and velocity.

A.1 Laws of Mechanics

Physical science stems from this point that: the concept of **velocity** is recognized to play the central role in our apparent worlds and to be used as a fundamental item for our investigation.

Therefore, the fundamental propositions in physical science are the ‘*constancy*’ and the ‘*change*’ of velocity. And the so-called “laws” of mechanics are derived as follows:

A.1.1 First “Law” of mechanics

The physical science, translating man’s thought into physical world by means of language, adopted the unconditional assertion $X = X$ in concerning with the term **velocity**, and introduced the first law of mechanics as follows:

We express the statement of ‘*constant velocity*’, and we really want it to mean ‘constant velocity’ in physical sense.

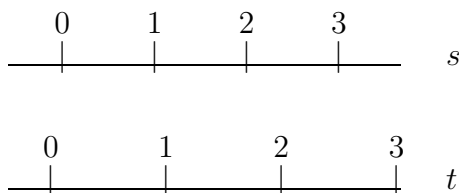
That is:

$$\begin{array}{ccc}
 X & = & X \\
 \text{‘constant velocity’} & = & \text{‘constant velocity’} \\
 \text{in language sense} & & \text{in physical sense} \\
 (1) & & (2)
 \end{array}$$

The left side is the result of the process of a rough approximation of check and balance of sensations of man as a whole that pre-scientifically represents a word for satisfaction of his generalized sensation and his thought related to *space* and *time*. The right side, however, is rather involved and requires deeper understanding and consideration of whatever constitutes the physical concept of the ‘*constant velocity*’.

By introducing the concept of *velocity* in physical sense in our apparent world, we already *conform* with a pattern of measurement that in classical physics accepted to be equal distances for space and equal intervals for time—directly connected to the concept of *rigid* unit of measurement. In fact, for measuring a velocity, the rigid units of measurements of space and time must be rigidly attached to the reference frame of measurement.

When we mean to have a physical ‘constant velocity’ of a body \mathcal{A} , if course with respect to a reference frame with measuring marks, it requires and implies to have a reference frame with constant velocity (including zero) with respect to another frame. The same argument holds for second and third frames and so on.



Frames with rigid units of measurements

Therefore, as soon as we visualize, in physical sense, a ‘constant velocity’ for a body, we already imply the existence of the series of special frames with well-defined rigid equal units of measurements, and with the constant velocities with respect to each other. This introduces a circular chain of interrelated frames, including the body \mathcal{A} , that have the ‘constant velocities’ with respect to each other. That is, by expressing a ‘constant velocity’ qualitatively we introduce the whole world of constant velocities. See Figure A.1

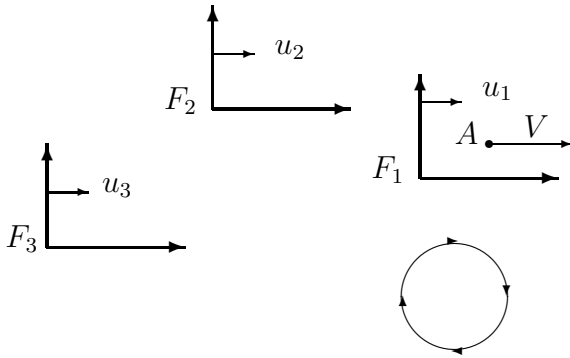


Figure A.1: Frames with constant velocities

Furthermore, when we state ‘constant velocity’ we really mean to have ‘no change in velocity’. That is, we define our apparent world to be such that when we state ‘no change of velocity’ we really want to have ‘no change of velocity’. To achieve this we automatically impose special requirements and conditions on the ingredients of the velocity, namely, **space** and **time** such that they make our concept workable for our practical use.

The left side of above expression can be generalized as ‘no change of velocity’, and by consideration of previous discussion and taking into account the directionality of the velocity the ‘no change of velocity’ on right side represents a ‘uniform motion in straight line’. The term ‘change of velocity’ is commonly referred to ‘*acceleration*’, then, qualitatively:

$$\begin{array}{ll} \text{No acceleration} & = \text{Uniform motion in straight line} \\ \text{in language sense} & \text{in physical sense} \\ (1) & (2) \end{array}$$

and quantitatively:

$$\begin{array}{ll} \text{No acceleration} & = \text{Constant velocity} \\ \text{in language sense} & \text{in physical sense} \\ (1) & (2) \end{array}$$

Therefore, this is simply an expression with both language and physical implications, which is derived from the $X = X$ assertion. Physics, unfortunately, refers to this statement as the law of nature—called the first law of mechanics. Thus, the so-called “first law of mechanics” is no longer a law of nature, rather, is a simple assertion of equality statement regarding the *constant velocity*, which in turn implies the special requirements and conditions for the units of measurements and the reference frames. Physics expresses this equality in the following form: both sides are multiplied by a constant M (including zero) and that constant M times the acceleration is defined as “Force”, then, the above relation qualitatively will be:

$M \times (\text{No } a) = \text{Uniform motion in straight line}$

generalizing the left side by including $(\text{No } M) \times a$, i.e.

$$\text{No } (M \times a) = M \times (\text{No } a) \ \& \ (\text{No } M) \times a$$

then,

$$\text{No } \underbrace{(M \times a)}_{\text{Force}} = \text{Uniform motion in straight line}$$

$$\& \underbrace{(\text{No } M) \times a}_{\text{Zero-mass body}}$$

and quantitatively:

$$\text{No } \underbrace{(M \times a)}_{\text{Force}} = M \times \text{constant Velocity}$$

$$\& \underbrace{(\text{No } M) \times a}_{\text{Zero-mass body}}$$

It is apparent that a different definition is attached to the term “Force” for a different *constant* M . Physics introduces several definitions for “Force” with corresponding *constant* M , and loosely uses the term “Mass” for all of these constants. Therefore, not only there are no physical realities attached to terms “Force” and so-called “Mass”, there are also no unique definitions of “Force” and “Mass”.

As an example, in Newtonian mechanics, excluding zero-mass bodies, the term “force” and constant “mass m ” are defined such that:

$$\text{No } \underbrace{(m \times a)}_{\text{Force}} = m \times V$$

These various forces and masses are related to the internal property of a body and are referred to as *inertia* forces and *inertial* masses respectively, and the term mV is referred to momentum. There are also other definitions for forces and masses that are related to the external conditions and referred to as *active*. It is interesting to note that the zero-mass bodies can have any acceleration when they are subjected to no force. See Max Jammer's *concept of force, and concept of mass*, and refer to the works of Newton, Mach, Kirchhoff, Hertz, and Einstein (special and General theory) for several definitions of force and mass; such as inertial mass, attraction mass, microscopic mass, mass as density times volume; weak, strong, nuclear, gravity forces with corresponding masses. Also, refer to the recent unification theories regarding various force and mass concepts.

A.1.2 Second “Law” of mechanics

Similarly, the so-called “second law of mechanics” can be interpreted as follows:

We express the statement of ‘*change of velocity*’, and we really want it to mean ‘change of velocity’ in physical sense.

That is:

$$\begin{array}{ccc} X & = & X \\ \text{‘change of velocity’} & = & \text{‘change of velocity’} \\ \text{in language sense} & & \text{in physical sense} \\ (1) & & (2) \end{array}$$

The left side can be expressed by the word ‘acceleration’ corresponding to man’s thought regarding space, time and velocity, and by consideration of previous discussion and taking into account the directionality of the velocity the ‘change of velocity’ on the right side represents a ‘general motion with change of velocity’, then, qualitatively:

$$\begin{array}{ccc} \text{Acceleration} & = & \text{Motion with change of velocity} \\ \text{in language sense} & & \text{in physical sense} \\ (1) & & (2) \end{array}$$

and quantitatively:

$$\begin{array}{ccc} \text{Acceleration} & = & \text{Change of velocity} \\ \text{in language sense} & & \text{in physical sense} \\ (1) & & (2) \end{array}$$

Physics expresses this equality in the following way: both sides are multiplied by a *constant* M , and as before that *constant* M times the acceleration is defined as “inertia Force”, that is commonly called “Force”, then the above relation qualitatively will be:

$$\begin{array}{ccc} M \times a & = & \text{Motion with acceleration} \\ & & (\text{Force}) \end{array}$$

and quantitatively:

$$\begin{array}{ccc} M \times a & = & M \times \text{acceleration} \\ & & (\text{Force}) \end{array}$$

As before, it is apparent that a different definition is attached to the term “Force” for a different constant

M. These definitions are related to the internal property of a body so that the forces are called the inertia forces and the masses are called the inertial masses. Physics introduces several definitions for “Force” with its corresponding constant *M*, and loosely uses the term “Mass” for all of these constants. Hence, not only there is no physical reality to terms “Force” and so-called “Mass”, also there is no unique definition for “Force” and “Mass”. As an example, in Newtonian mechanics, the term inertia “force” f_i and constant inertial “mass *m*” are defined such that:

$$m \times a = m \times \text{acceleration} \\ (\text{Force } f_i)$$

Furthermore, the term *M* can be more *general* (rather than constant), as described in the text, as a function of position, velocity and time, which corresponds to a more *general* definition for the “inertia force” F_i .

Therefore, the so-called “Second Law of mechanics” is no longer a law of nature; rather, it is a simple assertion of equality statement regarding the ‘change of velocity’, which in turn implies the special requirements and conditions for the reference frames, namely: the frames involving in measuring velocity possess *no acceleration* with respect to each other. What in practice is used as the “second law of mechanics” it is an approximation to the **principle of nothingness**, as described in the text, in which the “inertia force” as defined and restricted here is equated to the “active force” as defined in the text.

These relations with their corresponding definitions are usable within the limits of the defined terms, and any violation of these definitions causes the collapse of these

so-called “laws”. For example, the “second law” collapses when we try to describe it in reference to a world having an accelerating reference frame, or in reference to a world with additional “mass” not included in the definition; or in reference to a world with additional forces beyond the definition of “force”.

It should be noted that Aristotle (same as Einstein) did not believe in the possibility of motion in an infinite straight line. He assumed a need for a force for having a uniform motion, but his primary form of motion was the motion in a *circle*, which is in agreement with the classical mechanics.

Appendix B

Glossary

Event

Event synonymous with “reality” is the sole building block of all existence. The physics definition of “event” as a point in space and time should be referred to as “signal”. Nothing is left in the world but **event**.

Eventics

Event + ics (in English): all that is pertinent to event, Eventica (Latin), Eventika (Greek), Eventique (French).

Eventum

It is plural of eventa (analogous to quanta), and also is analogous to medium.

Eventon

The basic element of event, analogous to electron.

Implicit and Explicit

The word '*implicit*' is based on the verb '*to implicate*'. To implicate means '*to fold inward*' (as multiplication means *fold many times*). To encounter the undivided wholeness of whole world, the term **holoevent** is introduced, which carries implicate (enfolded) order in implicate region of real world, and comes to grasp of universal being in explicate region of the apparent world in terms of the series of explicate events.

'*Plex*' is a form of the Latin '*plicare*' meaning '*to fold*'. Simplex means one-fold, complex means folded together, and multiplex means many complexes all folded together (literally this is what is meant by '*manifold*'). However, by custom, manifold has come to mean '*continuum*'.

Verb, Holomovement, Process

In old Hebrew, the *verbs* were taken as primary. The root of almost all words was a certain verbal form, while adverbs, adjectives and nouns were obtained from the verbal form with prefixes, suffixes, and so on. **Bohm** emphasizes a structure in which verb has a primary function. He insists on wholeness as a flowing movement similar to the **Whitehead** process. He calls the looking-glass universe the '*holomovement*' universe, and considered universe an undivided and an unbroken whole (*uni + verse*). In **Eventics**, the wholeness as an enfolded order is the property of the *holoevent* of real world and the *omnievent* of omniwholeworld (superworld). The movement and process are the kind of unfolding orders of holoevent that imply the time and space or process in time. In Eventics, the unfolding order of holoevent is a single primary verb '*occurring*' (holoevent) containing all verbs.

This single *holoevent* unfolds in our apparent worlds into the *series of events*.

An example of a process is a wave on the ocean that is not a material moving toward the shore; rather, it is a process. Another example is the visible apparent motion of light of a sign with several bulbs that is produced by a series of on and off switching. As another example, a radio wave can “carry”, enfolded in its medium, various orders, which can be unfolded by the electronic circuitry of a television into a two-dimensional moving image, visible as a series of apparent events.

Wholeness and Fragmentation

Western world views are based on *fragmentation*, whereas Eastern world views are based on *wholeness*. This is owing to the different attitudes of two societies toward the ‘*measure*’. West emphasized the development of science and technology (dependent on *measure*), while East emphasized religion and philosophy (directed to *im-measurable*). In this respect, **Eventics** follows the Eastern view that reality is immeasurable. Reality is beyond man and prior to him, cannot depend on measure as insight created by man. Latin verb ‘*videre*’ = to see, from which the word video. To divide = *di* (separate) + *videre* = to see as separate.

The word hologram is derived from the Greek words ‘*holo*’, meaning ‘*whole*’, and ‘*gram*’ meaning ‘*to write*’. That is, the hologram is an instrument that ‘*writes the whole*’. By the hologram, in each region of space, the order of a whole illuminated structure is ‘*enfolded*’ and ‘*carried*’ in the light waves. More generally, the order

can be ‘*enfolded*’ and ‘*carried*’ in events—electromagnetic waves, electron beams, sound, or in other countless forms of movements.

A hologram is another analogy for the whole and undivided order of the universe. A hologram, with its interference patterns of coherent (laser) light as a series of events enfolds a much subtler range of structures and orders. When these patterns are recorded on a plate and retrieved by a laser beam, the viewer sees three-dimensional scenes from many directions. The holographic plate records, coded in its interference pattern of concentric rings, a three-dimensional image of the entire scene everywhere on the plate. Each and every “part” of the plate reflects the whole image (though lacking crispness).

Description, Reason and Ratio

The word ‘*de-scribe*’ literally means to ‘*write down*’, but it does not mean that the terms appearing in such a description can be ‘*separated*’ into autonomously behaving components. A conceptual analysis provides a special sort of description, in which we can think about something as if it were broken into autonomously behaving parts.

‘*Ratio*’ is the Latin word from which our modern ‘*reason*’ is derived. In the ancient view, reason is seen as insight into a totality of ratio or proportion, regarded as relevant inwardly to the nature of things (and not only outwardly as a form of comparison with a standard or unit.) Of course, this ratio is not necessarily merely a numerical proportion (though it does include such pro-

portion). Rather, it is in general a qualitative sort of universal proportion or relationship. The primary relevant in a description is how the terms are related by *reason* or *ratio*. As a result, every theory introduces a *ratio* between the terms as an important entity for the description of the world. Old physics introduced the *ratio* of space and time as *velocity*, and relativity and quantum mechanics emphasizes on *speed of light*.

Measure, Order and Structure

In ancient Greek, the word '*measure*' was regarded as inner measure, and not in the modern sense as outward display or appearance. It is implied as a form of insight into the essence of everything. They had notions of measure in music and in the visual arts. The basic meaning of the word measure was '*limit*' or '*boundary*', and it was specified in terms of qualitative reason. The word *medicine* (to cure), and wisdom, derived from 'measure', implies that to be healthy and wise is to keep everything in a right measure. In the modern usage of the word '*measure*', the aspect of quantitative proportion or numerical ratio is emphasized. In Eventics, we consider both qualitative and quantitative aspects of the word.

The consideration of the working together of '*order*' and '*measure*' in the broader and more complex contexts leads to the notion of '*structure*'. The word '*structure*' is from Latin root '*struere*' meaning to build, to grow and to evolve. It implies a harmoniously organized totality of order and measure, which is both hierarchic (build on many levels) and extensive (spreading out on each level). '*Organize*' is from the Greek root '*ergon*', meaning 'to

work'. So we may think of all aspects of a structure as '*working together*' in a coherent way. The root of the word '*poetry*' is the Greek '*poiein*', meaning '*to make*' or '*to create*'. As the degrees of order become high, we reach a description, which is called '*random*'. Random should not be called '*disorder*'. Rather, it has an order of a high degree. Predictability is a property of a special kind of order.

Constant

It is from '*to constate*' from Latin *constare* (*stare* = to stand, *con* = together), to establish, to ascertain, to confirm.

Jerk

It is defined as a vector that specifies the time rate of change of acceleration—third derivative of space with respect to time. In physics, it is often referenced to knock, shock, pulse and impact characteristics of mechanical behavior.

Kick

It is a vector that specifies the fourth derivative of space with respect to time. In physics, it is applicable to impact mechanics in its new formulation, and it could be associated with Brownian motion.

Omni: from Latin *Omnis* indicates all

Paradigm: from Greek *paradeigma* (pattern).

Transcend: to pass beyond the human limit

Transcendent: designates Knowledge that is beyond
the limits of experience.

Prevent: pre-event

Omni-holon: denotes highest whole with no parts
connotation.

DEFINITIONS

; Arithmetical and functional operations

$\begin{matrix} \textit{holistic} \\ \curvearrowright \\ \textit{approach} \end{matrix}$ Holistic approach, in place of =

$\begin{matrix} \textit{holistic} \\ \curvearrowright \\ \textit{system} \end{matrix}$ Holistic system, in place of =

$\begin{matrix} \textit{holistic} \\ \bowtie \\ \textit{lump} \end{matrix}$ Holistic lump, in place of +

$\begin{matrix} \textit{holistic} \\ \bowtie \\ \textit{system} \end{matrix}$ Holistic joining, in place of +

$\begin{matrix} d \\ \curvearrowright \\ \textit{approach} \end{matrix}$ Discretized approach, in place of =

$\begin{matrix} d/d \\ \curvearrowright \\ \textit{approach} \end{matrix}$ Discretized and decoupled, in place of =

$\begin{matrix} \textit{group} \\ \leftarrow \\ \rightleftarrows \end{matrix}$ Discretized and mixed grouped

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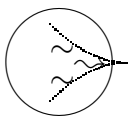
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